



STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF WATER RESOURCES

William R. Snodgrass - Tennessee Tower
312 Rosa L. Parks Avenue, 11th Floor
Nashville, Tennessee 37243-1102

December 18, 2013

Mr. Paul Patterson
Administrator of Environmental Engineering
e-copy: paul.patterson@memphistn.gov
125 N. Main St., Room 620
Memphis, TN 38103

Subject: **Draft of NPDES Permit No. TNS068276**
City of Memphis MS4
Memphis, Shelby County, Tennessee

Dear Mr. Patterson:

Enclosed please find a draft copy of the NPDES permit which the Division of Water Resources (the division) proposes to issue. This draft copy is furnished to you solely for your review of its provisions. This permit authorizes no wastewater discharges. The issuance of an official permit is contingent upon your meeting all of the requirements of the Tennessee Water Quality Control Act and the Rules and Regulations of the Water Quality, Oil and Gas Board.

Also enclosed is a copy of the public notice that announces our intent to issue this permit. The notice affords the public an opportunity to review the draft permit and, if necessary, request a public hearing on this issuance process. If you disagree with the provisions and requirements contained in the draft permit, you have thirty-five days from the date of this correspondence to notify the division of your objections. If your objections cannot be resolved, you may appeal this permit upon issuance. This appeal should be filed in accordance with Section 69-3-110 of the Tennessee Code Annotated.

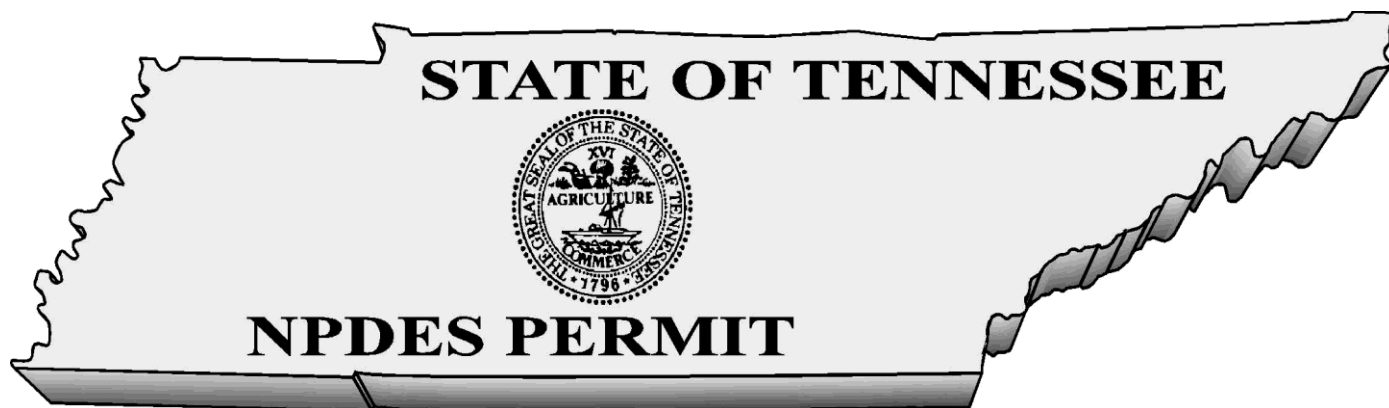
If you have questions, please contact the Memphis Environmental Field Office at 1-888-891-TDEC; or, at this office, please contact Mr. Paul Higgins at (615) 532-1178 or by E-mail at *Paul.Higgins@tn.gov*.

Sincerely,

Vojin Janjic
Manager, Water-Based Systems

Enclosure

cc: NCO Permit File, Memphis Environmental Field Office
Mr. Dwan L. Gilliom, Public Works Director, City of Memphis, Division of Public Works, Dwan.Gilliom@memphistn.gov
Mr. David Hagerman, P.E., NPDES Stormwater Program Mgr, City of Knoxville MS4, dhagerman@cityofknoxville.org
Ms. Tasha King-Davis, P.E., Stormwater Program Manager, City of Memphis, tasha.king@memphistn.gov
Ms. Mary Wilder, , marywild@comcast.net
Mr. Karl Mertig, , Karl.Mertig@kimley-horn.com
Mr. Nick Price, Research Analyst, World Resources Institute, nick.price@wri.org
Mrs. Joellyn E Brazile, CPESC, Unit Manager, TDEC Division of Water Resources, Joellyn.Brazile@tn.gov
David Mason, Principal Engineer, CDM Smith, MasonD@cdmsmith.com
Mr. Scott Morgan, P.E., Administrator Environmental Construction, City of Memphis Environmental Engineering, scott.morgan@memphistn.gov
Ms. Mary Kuo, US EPA Region 4, kuo.mary@epa.gov



No. TNS068276

Authorization to discharge under the
National Pollutant Discharge Elimination System (NPDES)

Issued By

Tennessee Department of Environment and Conservation
Division of Water Resources
William R. Snodgrass - Tennessee Tower
312 Rosa L. Parks Avenue, 11th Floor
Nashville, Tennessee 37243-1102

Under authority of the Tennessee Water Quality Control Act of 1977 (T.C.A. 69-3-101 et seq.) and the delegation of authority from the United States Environmental Protection Agency under the Federal Water Pollution Control Act, as amended by the Clean Water Act of 1977 (33 U.S.C. 1251, et seq.)

Discharger: **CITY OF MEMPHIS MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4)**

is authorized to discharge stormwater runoff, in accordance with the following stormwater quality management program(s), effluent limitations, monitoring requirements and other provisions as set forth in Parts I through IX herein, from all portions of the MS4, owned or operated by the City of Memphis to Waters of the State of Tennessee.

This permit shall become effective on: ***Second Draft Permit***

This permit shall expire on:

Issuance date:

for Sandra K. Dudley, PhD, P.E.
Environmental Program Administrator
Division of Water Resources

This page is intentionally left blank.

NPDES PERMIT FOR DISCHARGES FROM
CITY OF MEMPHIS MUNICIPAL SEPARATE STORM SEWER SYSTEM MUNICIPAL
SEPARATE STORM SEWER SYSTEMS (MS4)

TABLE OF CONTENTS

1.	Coverage Under this Permit.....	1
1.1.	Permit Area	1
1.2.	Authorization to discharge	1
1.3.	Permittee	1
1.4.	Responsibilities of Permittee	1
1.5.	Types of authorized discharges.....	2
1.6.	Limitations on Coverage.....	3
1.7.	Permit Responsibilities Concerning Sanitary Sewage	4
2.	Special Conditions.....	4
2.1.	Discharges to Water Quality Impaired Waters	4
2.2.	Discharges into Waterbodies with EPA-Approved or Established TMDLs	4
2.3.	Discharges to Impaired Waterbodies without Approved/Established TMDLs.....	5
2.4.	Protection of State or Federally Listed Threatened and Endangered Species	5
3.	Stormwater Management Program (SWMP)	7
3.1.	Program Requirements	7
3.2.	Program Elements.....	8
3.3.	Stormwater Monitoring & Sampling Program.....	24
3.4.	Reviewing and Updating Stormwater Management Programs	29
3.5.	Enforcement Procedures	30
4.	Monitoring, Recordkeeping, Assessment and Reporting	32
4.1.	Analytical monitoring	32
4.2.	Non-analytical monitoring	32
4.3.	Recordkeeping	33
4.4.	Reporting	33
5.	Standard Permit Conditions	33
5.1.	Duty to Comply	33
5.2.	Duty to Reapply	34
5.3.	Need to Halt or Reduce Activity Not a Defense	34
5.4.	Duty to Mitigate.....	35
5.5.	Duty to Provide Information	35
5.6.	Other Information	35
5.7.	Signatory Requirements.....	35
5.8.	Property Rights	36
5.9.	Proper Operation and Maintenance	37
5.10.	Inspection and Entry	37
5.11.	Permit Actions	37
5.12.	Permit Transfers.....	37
5.13.	Anticipated Noncompliance.....	37
5.14.	State Environmental Laws	37

5.15.	Severability	38
5.16.	Procedures for Modification or Revocation.....	38
5.17.	Planned Changes.....	38
6.	Definitions.....	38
7.	APPENDIX A – MS4 Annual Report	A-1
8.	Rationale (Fact sheet)	R-1

1. COVERAGE UNDER THIS PERMIT

1.1. Permit Area

This permit covers all areas located within the corporate boundary of the City of Memphis, located in Shelby County, Tennessee. The permit area excludes portions of Memphis that are within boundaries of the combined sewer system, satellite cities with Phase II Municipal Separate Storm Sewer System (MS4) permits, and/or other NPDES regulated municipal separate storm sewer system facilities (e.g. Shelby County, TDOT, University of Memphis).

1.2. Authorization to discharge

Except for discharges prohibited under subpart 1.6 below, this permit authorizes existing or new stormwater point source discharges to waters of the State of Tennessee from those portions of the Municipal Separate Storm Sewer System (MS4) owned or operated by the City of Memphis, Division of Public Works.

1.3. Permittee

The following party is the permittee subject to the limits and conditions of this permit:

City of Memphis, Municipal Separate Storm Sewer System (MS4).

1.4. Responsibilities of Permittee

The permittee is responsible for the following:

- a. compliance with permit conditions relating to discharges from portions of the MS4 where they are the owner or operator;
- b. implementing the Stormwater Management Program (SWMP) through development of a Stormwater Management Plan (Plan) on portions of the MS4 where they are the owner or operator;
- c. where permit conditions are established for specific portions of the MS4, the permittee need only comply with the permit conditions relating to those portions of the MS4 for which they are the owner or operator;
- d. a plan of action to assume responsibility for implementation of stormwater management and monitoring programs on their portions of the MS4 should inter-jurisdictional agreements allocating responsibility between multiple permittees (if any) be dissolved or in default.
- e. submission of annual reporting requirements as specified in part 4;
- f. collection of monitoring data as required by subparts 3.3 below, and according to such agreements as may be established between multiple permittees (if any); and,
- g. implementation of system-wide management program elements, including system-wide public education efforts.

The MS4 is responsible for compliance with all applicable permit requirements and activities within its jurisdictional boundaries. Some of these requirements and activities, such as impaired stream monitoring and outfall screening for illicit discharges, are directly related to stormwater discharges to waters of the state. Others, such as the implementation and enforcement of construction stormwater codes and site plans review, are applicable across the geographical boundaries of the MS4 jurisdiction, whether or not stormwater is discharged through an MS4 sewer. Ultimately, all permit requirements are directly related to the quality of stormwater runoff on property within the MS4's jurisdiction. The MS4 is not held responsible for discharges of pollutants that enter receiving waters without contact with the permitted MS4 storm sewer system, but is held responsible for enforcing all applicable stormwater related codes and on site permit requirements across the entire city-wide jurisdiction. The Memphis MS4 is not held responsible for any actions or activities within the jurisdictional boundaries of another MS4, whether those boundaries are adjacent to or included within the Memphis MS4 jurisdictional boundaries. However, if the actions or activities within the jurisdiction of another MS4 produce a discharge which enters the Memphis MS4 storm sewer system, the Memphis MS4 will be held responsible in whole or in part for such a discharge.

1.5. Types of authorized discharges

1.5.1. Stormwater discharges

This permit authorizes the City of Memphis to discharge stormwater to waters of the state from the City of Memphis Municipal Separate Storm Sewer System, except as excluded in subpart 1.6.

1.5.2. Non-stormwater discharges

The permittee is authorized to discharge the following non-stormwater sources provided that the permittee has not determined these sources to be significant contributors of pollutants to waters of the state¹:

- Water line flushing
- Landscape irrigation
- Diverted stream flows
- Rising ground waters
- Uncontaminated ground water infiltration (infiltration is defined as water other than wastewater that enters a sewer system, including sewer service connections and foundation drains, from the ground through such means as defective pipes, pipe joints, connections, or manholes. Infiltration does not include, and is distinguished from, inflow.)
- Uncontaminated pumped ground water
- Discharges from potable water sources
- Air conditioning condensate
- Irrigation water
- Springs
- Water from crawl space pumps
- Footing drains
- Lawn watering
- Individual residential car washing

¹ see 40 C.F.R. § 122.26(d)(2)(iv)(B)(1)

- Flows from riparian habitats and wetlands
- Dechlorinated swimming pool discharges
- Street wash water
- Discharges or flows from fire fighting activities

1.6. Limitations on Coverage

This permit does not authorize:

- a. Discharges that are mixed with sources of non-stormwater unless such non-stormwater discharges are in compliance with an NPDES permit.
- b. Permitted stormwater discharges associated with industrial activity as defined in 40 CFR §122.26(b)(14). Stormwater discharges from certain industrial construction activities, as defined along with other construction activities in this permit, are excluded from this limitation.
- c. Discharge or conducting discharge-related activities that are likely to jeopardize the continued existence of legally protected listed or proposed threatened or endangered aquatic fauna and flora species (or critical habitat of said species) under the Endangered Species Act (ESA) or other applicable state law or rule. See sub-part 2.4 for instructions related to evaluating your program with respect to state or federally listed species.
- d. Discharges or conducting discharge related activities that will cause a prohibited take of federally listed aquatic species (as defined under Section 3 of the ESA and 50 CFR §17.3), unless such take is authorized under Sections 7 or 10 of the ESA.
- e. Discharges or conducting discharge-related activities that will cause a prohibited take of state listed aquatic species (as defined in the Tennessee Wildlife Resources Commission Proclamation, Endangered or Threatened Aquatic Species, and in the Tennessee Wildlife Resources Commission Proclamation, Wildlife in Need of Management), unless such take is authorized under the provisions of Tennessee Code Annotated §70-8-106(e).
- f. Discharges that would cause an in-stream exceedance of water quality standards unless the following conditions apply. The Stormwater Management Plan must include a description of the best management practices (BMPs) that the MS4 will use to control the pollutant of concern to the Maximum Extent Practicable. The division may require a corrective action plan if discharges from the MS4 are determined to cause or contribute to an in-stream exceedance of water quality standards.
- g. Discharges of stormwater-borne pollutants at levels that would be in violation of a specific wasteload allocation (WLA) applicable to MS4 permits and as defined in the implementation plan contained in an EPA approved or established Total Maximum Daily Load (***TMDL (Total Maximum Daily Load)***).
- h. Discharges of materials resulting from a spill within the jurisdiction of the MS4, except emergency discharges required to prevent imminent threat to human health or to prevent severe property damage, provided reasonable and prudent measures have been taken to minimize the impact of the discharges.

- i. Discharges that do not comply with the division's anti-degradation policy for water quality standards, pursuant to the Rules of the Tennessee Department of Environment and Conservation (TDEC), Chapter 1200-4-3-.06, titled "Tennessee Antidegradation Statement."

1.7. Permit Responsibilities Concerning Sanitary Sewage

Nothing in this permit should be construed as to require specific actions of the MS4 in preventing, correcting or cleaning up sanitary sewage overflows. All direct control of sanitary sewage overflows falls under the requirements of the September 2012 Consent Decree in United States of America and the State of Tennessee v. The City of Memphis (No. 10-2083)(W.D. Tenn.) However, this permit establishes certain expectations concerning the MS4's responsibilities in controlling discharges of the pollutants of concern associated with sanitary sewage. The MS4 has indirect control responsibilities when it comes to permit requirements like identifying illicit discharges of sanitary sewage and notifying the proper party responsible for preventing and cleaning up the illicit discharge.

2. SPECIAL CONDITIONS

2.1. Discharges to Water Quality Impaired Waters

Using the most current EPA-approved [303\(d\) list](#) published on the division's web site along with the division's [GIS mapping tool](#) available on the division's web site (<http://tnmap.tn.gov/wpc/>), the permittee must determine whether stormwater discharges from the MS4 discharge pollutants of concern to an impaired waterbody. Additionally, the permittee must determine whether or not an EPA approved or established **TMDL (Total Maximum Daily Load)** is applicable to waters receiving MS4 discharges. A list of [EPA-Approved TMDLs](#), arranged by watershed, can be found on the division's web site (<http://www.tn.gov/environment/water/watersheds/>). This list includes EPA established TMDLs.

Alternatively, the permittee may obtain an electronic copy of the division's GIS files covering the permittee's corporate boundaries for use with the permittee's GIS mapping software to make the required determination.

2.2. Discharges into Waterbodies with EPA-Approved or Established TMDLs

The permittee must implement stormwater pollutant reductions consistent with the assumptions and requirements of any applicable wasteload allocation(s) in Total Maximum Daily Loads (TMDLs) established or approved by EPA. If the permittee discharges into a water body with an approved or established TMDL, then the Stormwater Management Plan must include Best Management Practices (BMPs) specifically targeted to achieve the wasteload allocations (WLAs) prescribed by the TMDL and a monitoring and/or evaluation component to assess the effectiveness of the BMPs in achieving the wasteload allocations, and overall compliant with the standard of the **Maximum Extent Practicable**.

The BMPs must be consistent with the Implementation Plan of the TMDL. Unless contradictory to the TMDL Implementation Plan, the permittee is responsible for identifying and interpreting the appropriateness of specific BMPs for achieving the objective of the Implementation Plan considering the wasteload calculations in the TMDL, the effluent characterization of the MS4 discharge, and the pollutant removal of the BMP as demonstrated via monitoring. Selected BMPs, which do not require lengthy research or engineering design and construction, shall be implemented within 18 months of the effective date of this permit. If BMPs that require lengthy research or engineering design and

construction are deemed necessary, they shall be implemented within 32 months of the effective date of this permit. Extensions to the implementation schedule may be requested by submitting a written reasonable explanation for the extension to the appropriate EFO. The division will deny or grant the extension in writing (letter or email) within 30 days of the request.

Monitoring can entail a number of activities including but not limited to: outfall monitoring, in-stream monitoring and/or modeling. Monitoring requirements are further described in section 3.3.4 of this permit. The Stormwater Management Plan (Plan) developed by the permittee shall specifically identify the BMPs that target wasteload allocations (WLAs) prescribed by the TMDL.

Where TMDLs specify wasteload allocations in terms of percent reduction goals over a defined watershed area, the permittee shall detail in its Plan the field screening and monitoring activities, including dates that were used to identify, characterize and/or quantify loading of the pollutant of concern from the MS4 and the follow-up taken by the permittee.

If additional TMDLs are adopted during the term of the permit, the Plan shall be revised within 6 months of TMDL adoption to include specific BMPs that target the adopted (WLAs). Specific selected BMPs, which do not require design and construction, shall be implemented within 12 months of the TMDL established or approved by EPA. Specific selected BMPs that require engineering design and construction shall be implemented within 24 months of the TMDL established or approved by EPA. If the source of the impairment has been determined, management measures specific for reducing pollutant of concern from that specified source shall be included. The permittee may be added to a TDEC public notice mailing list for proposed TMDL actions at its discretion but in so doing the permittee shall assume the responsibility for ensuring that its contact information on the list is maintained up to date.

2.3. Discharges to Impaired Waterbodies without Approved/Established TMDLs

For the discharge of a pollutant of concern into a receiving water which has been identified on the current EPA-approved [303\(d\) list](#) of impaired waters, the permittee must document in its Stormwater Management Plan (Plan) how the BMPs will address the discharge of the pollutants of concern, and must demonstrate (through outfall monitoring, in-stream monitoring and/or modeling) that the discharge will not cause measurable degradation to the stream caused by the pollutant of concern. A monitoring component to assess the effectiveness of the BMPs in controlling the discharge of pollutants of concern must also be included in the Plan. Monitoring can entail a number of activities including but not limited to: outfall monitoring, in-stream monitoring and/or modeling. Monitoring requirements are further described in part 3.3.5 of this permit.

2.4. Protection of State or Federally Listed Threatened and Endangered Species

Within twelve months of the effective date of this permit, the MS4 must identify and inventory all streams that receive MS4 discharges and determine if the stream has been designated as supporting federally and/or state listed aquatic species and/or federally designated critical habitat. (This information is available at the following web sites http://environment-online.state.tn.us:7654/pls/enf_reports/f?p=9014:6:). The inventory must identify the stream name, 12 digit HUC Code and the federally and/or state listed aquatic species and/or federally designated critical habitat. Additionally, the MS4 must identify the location of all outfalls that discharge into the designated streams. The MS4 must utilize the information obtained in this process in conducting the annual review process found in sub-part 3.4.

2.4.1. **Threatened and Endangered Species Documentation and Reporting**

Within the twelve months of the effective date of this permit, the MS4 permittee must provide TWRA and USFWS the following information for review and comment. This information should be signed according to sub-part 5.7 of the permit.

If federally and/or state listed aquatic species and/or federally designated critical habitat are found within the jurisdiction of the MS4:

- List of federally and/or state listed aquatic species and/or federally designated critical habitat information
- List of designated receiving streams and 12 digit HUC Codes
- Location of all MS4 outfalls that discharge to the designated streams
- Copy of the last annual report submitted to TDEC DWR
- Copies of construction and permanent stormwater ordinances or other control mechanisms

If federally and/or state listed aquatic species and/or federally designated critical habitat are not found within the jurisdiction of the MS4:

- A letter stating that the MS4 found no federally and/or state listed aquatic species and/or federally designated critical habitat within the jurisdiction of the MS4

Information supporting the last annual report that relates to protection of federally and/or state listed aquatic species and/or federally designated critical habitat should be included with the submittal if available. Web links, spatial data (online or CD) and electronic searchable documents are encouraged. Documentation should be provided to the following contacts.

Tennessee Wildlife Resource
Agency
Environmental Services Division
Ellington Agricultural Center
P.O. Box 40747, Nashville, TN
37204
Title: Administrative Assistant

United States Fish and Wildlife
Service
Tennessee Ecological Services Field
Office
446 Neal Street, Cookeville, TN
38501
Title: Field Office Supervisor

This report must be filed and available for review upon request by the division or other agency.

2.4.2. **Threatened and Endangered Species Annual Review Process**

After the initial evaluation and documentation procedure, the MS4 must annually review the federally and/or state listed aquatic species and/or federally designated critical habitat data resources and the appropriate MS4 information defined above for any changes since the previous evaluation and documentation. The MS4 must provide USFWS and TWRA with documentation of only the applicable changes since the previous submittal, signed in accordance with sub-part 5.7 of this permit. If there were no changes in the program since the last documentation, the MS4 must send TWRA and USFWS a letter stating so.

2.4.3. **Wildlife Agency Request for Information and Feedback**

Upon review of the MS4's evaluation documentation, TWRA and USFWS may determine that special conditions exist which require additional information or distinctive control measures for the preservation of a particular vulnerable aquatic species and/or habitat. It is the responsibility of USFWS and TWRA to notify the MS4 directly, along with the division, of the conditions and request information and/or suggest control measures that the agencies believe will promote protection and/or recovery.

3. **STORMWATER MANAGEMENT PROGRAM (SWMP)**

3.1. **Program Requirements**

The permittee must continue to develop, implement, and enforce a SWMP as described below and according to 40 CFR Part 122.26(d)(2)(iv) to protect water quality, and to satisfy the appropriate water quality requirements of the CWA. The SWMP shall include engineering methods, system design, control techniques and/or management practices appropriate for the control of pollutants of concern. The elements of the SWMP must be documented by the permittee in a Stormwater Management Plan (Plan). The Plan must be reviewed periodically in accordance with sub-part 3.4 and also in conjunction with the requirements of this new permit. Changes to the Plan required by this permit must be completed within 18 months of the effective date of the permit. All changes to the Plan must be approved and documented according to sub-part 3.4.

The Plan must include the following information for each of the program elements described in sub-part 3.2 of this permit:

- Narrative effluent limitations requiring the implementation of [BMPs](#) and/or processes that the permittee or another entity will implement for each of the SWMP elements;
- The measurable goals for each of the [BMPs](#) including, as appropriate, the months and years in which the permittee will undertake required actions, including interim milestones and the frequency of the action; and
- The person or persons responsible for implementing or coordinating the SWMP elements in the Plan.
- The program element specific information detailed in sub-part 3.2

Implementation of the BMPs consistent with the SWMP and compliance with provisions of this permit, including reporting and monitoring requirements, constitutes compliance with the standard of reducing pollutants to the 'maximum extent practicable' (MEP). Unless otherwise specified in this permit, elements of the SWMP shall be implemented by the expiration of the permit.

3.1.1. **Requirement to Budget Adequate Resources to Comply with MS4 Permit**

3.1.1.1 **Secure Resources**

The permittee must secure the resources necessary to meet all requirements of this permit.

3.1.1.2 Annual Fiscal Analysis

The permittee shall conduct an annual fiscal analysis of the necessary capital and operation and maintenance expenditures necessary to accomplish the program tasks in Part 3 that coincides with permittee's fiscal year July 1 through June 30². Such analysis shall include a description of the source of funds that are proposed to meet the necessary expenditures, including legal restrictions on the use of such funds. A summary of the fiscal analysis will be included in the next annual report following the end of the permittee's fiscal cycle (e.g., If the annual report is due in December 2013, the fiscal analysis will cover FY 2013 ending on June 30, 2013).

3.2. Program Elements

The permittee shall implement the control measures contained in this subpart.

3.2.1. Public Education and Outreach

The permittee shall continue to implement its public education and outreach program. The focus of the program shall continue to be on impacts of stormwater discharges to water bodies and the steps that the public can take to reduce pollutants in stormwater runoff.

The Plan for this program element must outline how public education and outreach will inform public employees, businesses, and the general public of hazards associated with illicit discharges and the potential hazards of practices that contribute to illicit discharges, such as over-application of herbicides or improper storage of open waste oil containers. The Plan will also specifically target illicit discharges from commercial operations such as pesticide, herbicide, and fertilizer applicators; and construction site operators (e.g., brochures, signage, and community events, etc.).³ The Plan must also document how the program targets specific pollutants and prevents them from contaminating the MS4's storm sewers. For example, in certain areas known as [*hot areas*](#), the permittee must focus education and outreach on those particular pollutants of concern. Some educational programs can lend themselves to water quality improvements. The permittee is encouraged to pursue those programs and document related or expected water quality improvements.

The permittee shall implement its public education and outreach program at a minimum of 6 public events per calendar year that are targeted to reach significant communities concerning specific issues within the MS4's jurisdiction. Targeted issues should include, among other things, residential stormwater quality education, industrial/commercial site pollution issues and municipal facilities pollution issues (such as public recycling programs, environmentally protective landscaping practices, used oil recycling, and environmentally protective deicing practices). The permittee shall track and maintain records of public education and outreach activities. The permittee may develop a process to assess the change in public awareness and behavior resulting from the implementation of the education and outreach program (i.e., through surveys, tracking the number of attendees, etc.). If an assessment is made, a summary of this information shall be included in the annual report.

² See 40 C.F.R. § 122.26(d)(2)(vi)

³ See 40 C.F.R. § 122.26(d)(2)(iv)(A)(6), 40 C.F.R. § 122.26(d)(2)(iv)(B)(5, 6), and 40 C.F.R. § 122.26(d)(2)(iv)(D)(4)

3.2.2. **Public Involvement/Participation**

The permittee shall continue to implement its public participation program (e.g., stream clean-up events, public water quality forums, community or city-wide festivals, etc.).

The Plan for this program element shall detail the processes used to identify, prioritize and select opportunities for public involvement. The Plan shall detail how the permittee public notices program participation opportunities including participation in local stormwater management workgroups, volunteer recruiting, riparian plantings or stream clean-up events, and in illicit discharge identification and elimination. The Plan should detail the public notice requirements for each type of public participation activity, which may vary under the specific circumstances (e.g. publication in a newspaper, web site notification, etc.).⁴

The permittee may develop a website that includes information that will inform stakeholders of actions that will result in behavioral changes that will improve water quality, provide press releases or advertisements of activities to local cable networks, radio stations and/or newspapers, or other alternate methods that provide an effective equivalent.

The permittee shall track and maintain records of public involvement and participation activities. A summary of this information shall be included in the annual report.

3.2.3. **Illicit Discharge Detection and Elimination**

The permittee shall continue to implement the existing illicit discharge detection and elimination program. The permittee will undertake actions with the objective to eliminate documented illicit discharges as soon as feasible, following the timeframes and procedures outlined in the Plan and/or Enforcement Response Procedures (see below). The program will address the following categories of non-stormwater discharges or flows as illicit discharges only if the permittee identifies them as significant contributors of pollutants to the MS4:

water line flushing, landscape irrigation, diverted stream flows, rising ground waters, uncontaminated ground water infiltration, uncontaminated pumped ground water, discharges from potable water sources, foundation drains, air conditioning condensation, irrigation water, springs, water from crawl space pumps, footing drains, lawn watering, individual residential car washing, flows from riparian habitats and wetlands, dechlorinated swimming pool discharges, and street wash water (discharges or flows from fire fighting activities are excluded from the effective prohibition against non-stormwater and need only be addressed where they are identified as significant sources of pollutants to waters of the state).

The MS4 must implement a program that addresses the timely and proper methods of dealing with hazardous waste or material spills which occur within the jurisdiction of the MS4. Additionally, this program element shall identify opportunities for interagency planning, communication, and coordination of hazardous waste or material spills prevention, response and cleanup. The program shall identify the policies and procedures by which the permittee communicates and coordinates with TEMA ([Tennessee Emergency Management Agency](#)), local city and county emergency management agencies, local fire departments, other MS4s, and other agencies that respond to accidents and spill incidents to minimize localized impact and prevent and/or mitigate the impact on other area jurisdictions (MS4 jurisdiction or other city, county or state agency).

⁴ See 40 C.F.R. § 122.26(d)(2)(iv)

Additionally, this program element shall enable the permittee to effectively prohibit, through ordinance, or other regulatory mechanism, non-stormwater discharges (other than those listed in section 1.5.2) into the storm sewer system and to prohibit contamination of stormwater runoff from areas within the jurisdiction of the MS4, including [hot areas](#). The program element must be able, by ordinance or other regulatory mechanism, to implement appropriate enforcement procedures which include enforcement responses commensurate with the violation and which escalate in response to continued violation. The enforcement response procedures must allow for penalties as specified in TCA [68-221-1106](#). The enforcement response procedures shall specify the timeframe for complaint investigation. The enforcement response procedures must be updated to incorporate revisions identified by the permittee within 18 months of the permit effective date.

The Plan for this element shall include the implementation and maintenance of a mechanism for the public to report (e.g., via hotline or website), suspected illicit discharges. The Plan for this element shall encompass mapping, training, field screening and sanitary sewer seepage as detailed in the subsections below. The Plan should include timeframes under which the permittee must respond to public inquiries or reports. A summary of illicit discharge education and training, updates to the illicit discharge identification and elimination procedures, updates to the MS4 mapping and field screening plans, and identification of sanitary sewer overflows into the MS4 shall be included in the annual report.

3.2.3.1 MS4 Mapping

The permittee shall complete the implementation of the mapping and documentation of the Memphis MS4 stormwater drainage infrastructure owned and/or operated by the City of Memphis that is within the jurisdiction of the MS4 before the expiration date of the permit.

The Plan for this program element shall consist of an MS4-wide comprehensive inventory encompassing areas of Memphis within the permit coverage area and owned or operated by the City of Memphis. The comprehensive inventory must be updated to include significant changes or upgrades that occur to the draining infrastructure as a result of new development, significant redevelopment, City of Memphis construction/maintenance projects, and any other newly created MS4 areas. The permittee will be considered “up-to-date” if the inventory is updated within 9 months of MS4 drainage structure changes/additions are complete and turned over to the inventory technician. The schedule may be extended by written request of the EFO for large changes. The map must show the following, at a minimum:

- The location (preferably with latitude and longitude) of MS4 outfalls and drainage areas contributing to those outfalls that are operated by the permittee, and that discharge within the permittee’s jurisdiction to a receiving water;
- The location and name of waters receiving discharges from outfall pipes.
- Inputs into the storm sewer system, such as the inlets, catch basins, drop structures or other defined contributing points to the storm sewer system serving that outfall.
- The location and condition of major structural controls (retention basins, detention, basins, major infiltration devices, etc.)
- General direction of stormwater flow. Monitoring locations identified under section [3.3.1](#) and sub-section 3.3.3.2.
- The map shall also be used by the permittee to identify areas considered to be high-risk for illicit discharges.

3.2.3.2 Illicit Discharge Detection Training Program

The MS4 will continue administering the existing Illicit Discharge Detection and Elimination training program, which includes training for personnel in the following departments: Public Works, General Services, Parks, Police, and Fire and such others as the city deems appropriate. The Plan must identify field staff (by position) to be used in the program and identify the details of an appropriate training curriculum for individuals considering their current job responsibilities. For instance, health codes inspectors might be helpful looking for illicit discharges from restaurants and food manufacturers. The Plan should also account for follow-up training to address changes in the program, procedures and staffing.

The Plan must detail a training and education program for municipal field staff that, as part of their normal job responsibilities, administer the illicit discharge and illicit connection detection program, and shall also detail the components of its program in the Plan. The Plan must provide for follow-up training as needed to address changes in procedures, techniques, or staffing.

By no later than 12 months following the effective date of this permit, the permittee must complete training of all staff (including new staff within 1 year from date of hiring) identified in the paragraph above on the identification of an illicit discharge or connection, and on the proper procedures for reporting and responding to the illicit discharge or connection. The permittee must document and maintain records of the training provided and the staff trained.

Contact information, including the procedure for reporting an illicit discharge, must be provided to the permittee's staff or included in the permittee's fleet vehicles that are used by field staff that, as part of their normal job responsibilities, administer the illicit discharge and illicit connection detection program. Training program documents must be available for review by the permitting authority.

3.2.3.3 Field screening program

The permittee shall continue to implement and make necessary improvements to its ongoing program to determine whether non-stormwater entries are present in the storm drainage system, and to identify locations and sources of non-stormwater. Specifically, the Plan for this program element sub-element shall encompass:

- Updating its field screen inventory to reflect changes of land use activities in the industrial/commercial areas.
- Prioritization of areas for inspection and monitoring based on watershed or land uses or on previous field screening results, spills, complaints, illicit discharges, etc.
- Updating illicit discharge identification procedures if necessary
- Identification of potential discharges to receiving waters within the MS4's jurisdiction
- A means to communicate (to the EFO) the type, location and source of illicit discharges to waters of the state which occur within the jurisdiction of the MS4
- Identification of means to screen for sanitary sewerage seepage into the MS4.

3.2.4. Construction Site Stormwater Runoff Control

The permittee shall continue to implement and enforce its existing construction site stormwater runoff control program. This program must address pollutants in stormwater runoff from construction activities that result in a land disturbance one acre or greater. Reduction of pollutants discharged from construction activity disturbing less than one acre must be included if that construction activity is part

of a larger common plan of development or sale that would disturb one acre or more. The City may, subject to its sole discretion, implement and/or enforce its construction site stormwater control program, or parts thereof, as it deems appropriate, for construction sites less than one acre or of a larger common plan of development or sale that would disturb less than one acre. Nothing in this permit, however, shall be deemed to require the city to undertake any actions pertaining to construction sites of less than one acre or of a larger common plan of development or sale that would disturb less than one acre. The following elements must be included in the development and implementation of the program for construction sites equal to or greater than one acre or if that construction activity is part of a larger plan of development that would disturb one acre or more and must be included in the Plan:

Ordinance: The permittee shall maintain an ordinance or other regulatory mechanism to require erosion prevention and sediment controls, as well as enforcement measures for non-compliant parties: The ordinance must allow for penalties as specified in TCA [68-221-1106](#). Modifications to ordinances or other regulatory mechanisms for the construction site runoff control program are to be consistent with requirements of the NPDES [Tennessee Construction General Permit](#), which is effective as of the effective date of this individual permit, unless good cause exists [e.g., unless the discharge contains hazardous substances in excess of reporting quantities, or the facility and the municipality are not in compliance with applicable provisions of the NPDES permits issued to them for stormwater, or the discharge materially affects the municipal stormwater facilities through either the quantity of wastewater or its contamination. (See TCA 68-221-1110)] Modifications must be implemented within 24 months of the effective date of this permit. Ordinances changes must be retained in the Plan.

Requirements for construction site operators to implement appropriate erosion prevention and sediment control best management practices: The MS4's EPSC requirements shall be consistent with those described in the [TDEC EPSC Handbook](#).

Consistency with the Tennessee NPDES General Permit for Construction Stormwater TNR100000: The MS4's requirements for design storms, **Error! Reference source not found.** and special conditions for impaired waters or exceptional Tennessee waters must be consistent with those of the [Tennessee Construction General Permit](#), which is effective as of the effective date of this individual permit.

Site Inventory Requirements: The permittee must continue to maintain an inventory of active, known public and private construction sites within the jurisdiction of the MS4 that result in a total land disturbance equal to or greater than one acre or is part of a larger common plan of development or sale that would disturb one acre or more. The inventory must contain relevant information for each project. The permittee must make this inventory available to TDEC (in the Plan) upon request.

Educational materials requirements: The permittee will continue to direct construction site operators to materials concerning construction site stormwater runoff control.

- a. The permittee must either provide information on existing training opportunities or co-sponsor with other agencies training for construction operators on control measure selection, installation, implementation, and maintenance as well as overall program compliance.
- b. The permittee must develop and/or utilize existing outreach tools (i.e. brochures, posters, website, plan notes, manuals etc.) aimed at educating construction operators on appropriate selection, installation, implementation, and maintenance of stormwater controls, as well as overall program compliance.

- c. The permittee must make available outreach materials to construction operators who will be disturbing land within the MS4 boundary. The permittees' contact information and website must be included in these materials.
- d. The permittee must include a summary of training/educational/informational materials, media, and/or content, the targeted audience, and the method and timing of the activity(ies) in the Plan.

Requirements for construction site operators at sites within the MS4's jurisdiction to control waste materials: The permittee must require that operators control wastes such as discarded building materials, concrete truck washout, chemicals, litter, and sanitary waste at the construction site to avoid adverse impacts to water quality.

Specific procedures for site plan (including erosion prevention and sediment controls) review and approval: The permittee procedures must include an evaluation and approval of Erosion Protection and Sedimentation Control and Post Construction Runoff control plans. At a minimum, the Plan for this sub-element shall incorporate, or be consistent with, the following:

- Identification of Priority construction activity ;
- Pre-construction consultations (not necessarily on site or person-to-person) with construction-site operators for Priority construction activity ; and
- Inspections by the permittee of priority construction sites at least once per month.
- Inspections of non-priority construction sites on a quarterly basis

Procedures for managing public input on projects: The permittee must have mechanisms for public access to information on projects and for receiving and considering water quality comments from the public on those projects.

Procedures for site inspection and enforcement: The permittee must have procedures in place for its inspectors to evaluate construction site compliance during the various phases of construction (i.e., prior to land disturbance to verify all BMPs are in place, during active construction and following active construction) as deemed appropriate by the City. The enforcement program must include specific enforcement steps to verify and compel construction sites to be in compliance with the MS4's program (i.e., determine if controls measures have been selected, installed, implemented, and maintained according to the SWPPP or specified design standards/plans, etc.)

MS4 staff training: Inspectors must maintain certification under the Tennessee Fundamentals of Erosion Prevention and Sediment Control, Level 1. Site plan reviewers, for sites including EPSCs, must receive a certificate of completion from the Tennessee Erosion Prevention and Sediment Control Design Course, Level 2. It is recommended that inspectors as well as other employees performing in operational or executive MS4 positions receive training under both courses. Current training records must be retained for review.

3.2.5. **Permanent Stormwater Management in New Development and Significant Redevelopment**

3.2.5.1 Permit requirements

The permittee shall continue to develop, implement, and enforce a program to address permanent (post-construction) stormwater runoff management from new development and significant redevelopment projects that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale, that discharge into the MS4. The strategies and controls implemented through this program element must be designed to prevent or minimize the negative effects of stormwater pollutants on water quality after the completion of the construction phase and for the useful life a development or significant redevelopment project.

The program for this element shall continue to develop and implement strategies which include a combination of structural and/or non-structural best management practices ([*BMPs*](#)) appropriate for the community.

The program for this element shall develop and implement a set of requirements to establish, protect and maintain a [*water quality buffer*](#) along all [*streams*](#) at new development and significant redevelopment projects.

Minimum buffer requirements shall meet the following criteria: Streams or other waters with [*drainage areas*](#) less than 1 square mile will require buffer widths of 30 feet minimum. Streams or other waters with [*drainage areas*](#) greater than 1 square mile will require buffer widths of 60 feet minimum. The 60-foot criterion for the width of the buffer zone can be established on an average width basis at a project, as long as the minimum width of the buffer zone is more than 30 feet at any measured location. The MS4 would develop and apply criteria for determining the circumstances under which these averages will be available. A determination that standards cannot be met may not be based solely on the difficulty or cost associated with implementation.

Every attempt should be made for development and significant redevelopment activities to not take place within the buffer zone. If water quality buffer widths as defined above cannot be fully accomplished on-site, the MS4 must develop and apply criteria for determining the circumstances under which alternative buffer widths will be available. A determination that water quality buffer widths cannot be met on site may not be based solely on the difficulty or cost of implementing measures, but must include multiple criteria, such as: type of project, existing land use and physical conditions that preclude use of these practices.

The program for this element must include an ordinance or other regulatory mechanism to address permanent runoff from new development and significant redevelopment projects. Revisions to ordinances or other regulatory mechanisms to accommodate permanent stormwater management must be implemented within 48 months of the effective date of this permit.

3.2.5.2 Program Element Performance Standards

The MS4 must implement and enforce permanent stormwater controls that are comprised of runoff reduction and pollutant removal. The permittee must require that stormwater discharges from new development and redevelopment sites be managed such that post-development hydrology does not exceed the pre-development hydrology at the site, in accordance with the performance standards contained in this section. Runoff reduction is the preferred control practice as it can achieve both volume control and pollutant removal.

If runoff reduction and/or pollutant removal cannot be fully accomplished on-site per 3.2.5.2.1 and 3.2.5.2.2, then the MS4 may propose off-site mitigation and/or payment into a fund for public stormwater projects. The MS4 must develop and apply criteria for determining the circumstances under which these alternatives will be available. A determination that standards cannot be met on site may not be based solely on the difficulty or cost of implementing measures, but must include multiple criteria that would rule out an adequate combination of infiltration, evapotranspiration and reuse such as: lack of available area to create the necessary infiltrative capacity; a site use that is inconsistent with capture and reuse of stormwater; and/or physical conditions that preclude use of these practices.

3.2.5.2.1 *Runoff Reduction (green infrastructure)*

Site design standards for all new and significant redevelopment projects require, in combination or alone, management measures that are designed, built and maintained to infiltrate, evapotranspire, harvest and/or use, at a minimum, the first inch of every rainfall event preceded by 72 hours of no measurable precipitation. This first inch of rainfall must be 100% managed with no storm water runoff being discharged to surface waters. For all new and redevelopment on private property, the MS4 may opt to have controls installed on that private property, in the public right-of-way, or a combination of both.

The requirement to apply runoff reduction standards may be cancelled or mitigated by factors similar to the following:

- Where a potential for introducing pollutants into the groundwater exists, unless pretreatment is provided;
- Where pre-existing soil contamination is present in areas subject to contact with infiltrated runoff;
- Presence of sinkholes or other features.

Pre-development infiltrative capacity of soils at the site must be taken into account in selection of runoff reduction management measures.

The MS4 may develop a program to allow for incentive standards for redeveloped sites. The MS4 may provide a 10% reduction in the volume of rainfall to be managed for any of the following types of development. Such credits are additive such that a maximum reduction of 50% of the standard in the paragraph above is possible for a project that meets all 5 criteria:

- Redevelopment;
- Brownfield redevelopment;
- High density (>7 units per acre);
- Vertical Density, (Floor to Area Ratio (FAR) of 2 or >18 units per acre); and
- Mixed use and Transit Oriented Development (within ½ mile of transit).

3.2.5.2.2 *Pollutant Removal*

For projects that cannot meet 100% of the runoff reduction requirement (after any applicable incentive standards are applied), the remainder of the stipulated amount of rainfall must be treated prior to discharge with a technology reasonably expected to remove 80% total suspended solids (TSS). The treatment technology must be designed, installed and maintained to continue to meet this performance standard.

3.2.5.2.3 *Off-site mitigation*

For projects that cannot meet 100% of the runoff reduction requirements, the MS4 may allow runoff reduction measures to be implemented at another location within the same USGS 12-digit hydrologic unit code (HUC) as the original project. Off-site mitigation must be a minimum of 1.5 times the amount of water not managed on site. The off-site mitigation location (or alternative location outside the 12-digit HUC) and runoff reduction measures must be approved by the MS4. The MS4 shall identify priority areas within the watershed in which mitigation projects can be completed. The MS4 must create an inventory of appropriate mitigation projects, and develop appropriate institutional standards and management systems to value, evaluate and track transactions. Mitigation can be used for retrofit or redevelopment projects, but should be avoided in areas of new development.

3.2.5.2.4 *Payment into Public Stormwater Project Fund*

For projects that cannot meet 100% of the runoff reduction and pollutant removal standards, and cannot provide for off-site mitigation, the MS4 may allow the owner to make payment in a public stormwater project fund established by the MS4. Payment into a public stormwater fund must be at a minimum 1.5 times the estimated cost of on-site runoff reduction controls.

3.2.5.3 *Codes and Ordinances Review and Update*

Within one year of the effective date of this permit, the permittee shall review local codes and ordinances using the [EPA Water Quality Scorecard](#) (the scorecard). The permittee shall continue to implement existing permanent Stormwater Management Program until the codes and ordinances review and update is completed. A completed copy of the scorecard shall be submitted with the subsequent annual report.

The permittee must consider making revisions to policies, codes and ordinances that will provide "improved protection of receiving waters." The permittee shall review and change, where necessary, building codes or other local regulations, such as covenants, codes, ordinances, and restrictions. Included in the changes to appropriate mechanisms, the permittee must include a reasonable suite of infiltration, evapotranspiration and capture control measures, as well as encourage new options for permanent stormwater management. If the permittee decides to significantly limit the number of options, they must justify this limitation by demonstrating that the performance standard can be met with the limited set of management measures allowed.

3.2.5.4 Watershed Protection

When the permittee revises its urban development or community plan(s), effective water quality and watershed protection elements that require implementation of consistent water quality protection measures for new development and redeveloped sites must be considered and included where feasible. Examples of water quality and watershed protection elements to be considered include the following:

- Minimize the amount of impervious surfaces (roads, parking lots, roofs, etc.) within each watershed, by minimizing the creation, extension and widening of parking lots, roads and associated development whereas block connectivity and/or right of way acquisition needs are not sacrificed.
- Preserve, protect, create and restore ecologically sensitive areas that provide water quality benefits and serve critical watershed functions. These areas may include, but are not limited to; riparian corridors, headwaters, floodplains and wetlands.
- Implement management practices that prevent or reduce thermal impacts to streams, including requiring vegetated buffers along waterways, and disconnecting discharges to surface waters from impervious surfaces such as parking lots.
- Prevent disturbances of natural waterbodies and natural drainage systems caused by development, including roads, highways, and bridges.
- Avoid development in areas that are particularly susceptible to erosion and sediment loss.
- Implement standards to protect trees, and other vegetation with important evapotranspirative qualities.
- Implement policies to protect native soils, prevent topsoil stripping, and prevent compaction of soils.
- Implement water conservation policies that will reduce both stormwater and non-stormwater discharges via storm sewer systems.
- Implement policies that encourage stormwater practices close to the source of the runoff rather than downstream and lower in the watershed but should not discourage or prevent the potential use of large regional stormwater treatment Best Management Practices in certain applications.

3.2.5.5 Plan Review, Approval and Enforcement

The permittee shall continue to implement project review, approval and enforcement procedures. The review, approval and enforcement procedures shall apply at a minimum to projects requiring a construction general permit. The procedures shall be detailed in the enforcement procedures (see subpart 3.5) developed by the permittee, and shall include:

- An option for developers and/or their engineers to submit a pre-application concept plan, or to schedule a pre-application meeting with appropriate MS4 staff, to describe how the performance standards of paragraph 3.2.5.2 will be met;
- procedures for site plan review and approval that include inter-departmental consultations when deemed necessary by the permittee, a re-submittal process when an owner requests changes to an approved Stormwater Management Plan and/or when the MS4 denies approval of, or requires modification to the Stormwater Management Plan;

- a verification process to confirm whether permanent stormwater BMPs have been installed per design specifications and/or meets applicable requirements that includes enforcement procedures for bringing noncompliant projects into compliance.

3.2.5.6 BMP maintenance

The program must continue to maintain, develop and implement the necessary legal and enforcement authorities as well as contracts and procedures that will require that stormwater BMPs must be maintained. This program element will provide for long-term maintenance of these stormwater BMPs through a local ordinance or other enforceable policy.

This program element must require the owner or operator of sites subject to the performance standards in paragraph 3.2.5.2 to develop and implement a maintenance agreement (or an equivalent document ensuring compliance with this sub-section) addressing maintenance requirements for any BMPs, including off-site mitigation. The agreement must allow the permittee, or its designee, to conduct inspections of the stormwater BMPs and also account for transfer of responsibility in leases and/or deeds. When inadequacies are discovered, the permittee shall notify the BMP owner or operator of deficiencies. Notification to the BMP owner shall comply with the enforcement timeframes prescribed in the permittee's enforcement procedures.

The program for this element shall include the following schedule: Within 24 months of the effective date of this permit, the permittee shall have upgraded its databases for public or significant privately installed post-construction stormwater treatment devices (BMPs). Within 12 months of permit reissuance, the permittee shall submit a plan to the division Environmental Field Office -Memphis that details the activities the permittee will perform to verify BMPs are being properly maintained. The plan shall incorporate an MS4-conducted inspection component as well as a maintenance records review component. If written comments are not received within 30 days from TDEC receipt of the proposed plan, the permittee shall proceed to implement the program as proposed throughout the remainder of the permit cycle.

Where BMPs are the responsibility of the City of Memphis to maintain, the program must include provisions for documenting, e.g., with photos, maintenance logs, contractor invoices, and in the tracking system, that appropriate maintenance and/or repairs have been completed.

3.2.5.6.1 *Verification of maintenance responsibilities*

The program for this element must contain provisions that require that property owners or operators of any sites subject to the performance standards in sub-section 3.2.5.2 to provide verification of maintenance for the approved stormwater BMPs used to comply with the performance standards. Verification must include one or more of the following as applicable:

- The owner/operator's signed statement accepting responsibility for maintenance with a provision for transferring maintenance responsibility if the property is legally transferred to another party; and/or
- Written conditions in the sales or lease agreement that require the recipient to assume responsibility for maintenance; and/or

- Written project conditions, covenants and restrictions for residential properties assigning maintenance responsibilities to a home owner's association, or other appropriate group, for maintenance of runoff reduction and pollutant reduction stormwater BMPs; and/or
- Any other legally enforceable agreement that assigns permanent responsibility for maintenance of runoff reduction and pollutant reduction stormwater BMPs.

3.2.5.7 Inventory and Tracking of Best Management Practices

The program for this element shall include a system, or modify an existing system as necessary, within one year of the effective date of this permit, designed to track BMPs deployed at new development and significant redevelopment projects (this includes municipal operations/facilities). Tracking of BMPs installed in accordance with this permit, shall begin during the plans review and approval process. The database or tracking system shall include information on both public and private projects that are within the jurisdiction of the MS4. In addition to the standard information collected for all projects the tracking system shall also include:

- Short description of each stormwater BMP(s) (type, model number (if applicable), design or performance specifications);
- Precise location of BMP (preferably latitude and longitude);
- Maintenance and inspection requirements (frequency and/or schedule of maintenance and inspections) and
- Inspection information (date, inspector, compliance status; and other information the permittee may find useful).

3.2.5.8 Owner/Operator Inspections

The MS4 must develop and implement a program, as indicted below, of owner/operator inspections to confirm proper BMP operation and maintenance.

The owner/operator of BMPs installed according to the requirements of this section of the permit are to perform, or otherwise are otherwise responsible for routine inspections to verify that the BMPs are functioning properly. These inspections shall be conducted on an annual basis, at a minimum, and shall include visual observations of the BMP performance. These inspections shall be conducted by a person familiar with stormwater control measures implemented at a site. The program shall require owners or operators to maintain documentation of these inspections. The program may require submittal of this documentation to the permittee.

The program shall require an owner/operator subject to this part to have, or otherwise allow for, comprehensive inspections conducted of stormwater management facilities and practices. These inspections shall be conducted once every five years, at a minimum. The program shall require that such inspections be conducted by either a qualified professional specified by the MS4 program or a professional engineer or a landscape architect. Complete inspection reports for these five year inspections shall include:

- Facility type,
- Inspection date,

- precise location (address, latitude and longitude, or equivalent),
- BMP owner information (e.g., name, address, phone number, fax, and email),
- A description of BMP condition including: vegetation and soils; inlet and outlet channels and structures; embankments, slopes, and safety benches; spillways, weirs, and other control structures; and sediment and debris accumulation,
- Photographic documentation of BMPs, and
- Specific maintenance items or violations that need to be corrected by the BMP owner along with deadlines and re-inspection dates.

The program shall require owners or operators to maintain documentation of these inspections. The permittee may require submittal of this documentation.

3.2.6. Pollution Prevention/Good Housekeeping for Municipal Operations

The permittee must continue to develop and implement an operation and maintenance program that has the ultimate goal of preventing or reducing pollutant runoff from municipal operations.

The Plan must continue to develop and implement an annual employee training for employees responsible for municipal operations at facilities within the jurisdiction of the MS4 that handle, generate and/or store materials which constitute a pollutant of concern for MS4s. Examples of these materials may include, but are not limited to, lubricants, fuels, sand, gravel, soil, salt, pesticide, fertilizer, garbage, trash, clippings, vehicles, equipment, and other wastes. The goal of the training program should be to identify pollutants and prevent and/or reduce stormwater pollution from activities such as park and open space maintenance, fleet and building maintenance, new construction and land disturbances, and stormwater system maintenance.

The Plan must require the permittee to inspect at least yearly, and maintain if necessary, all municipally-owned or maintained structural stormwater controls (such as detention facilities, infiltration facilities, and bio-filters). For non-structural controls (such as grassy swales, litter control policies, and pet waste control policies), and municipally-owned or maintained permanent stormwater management practices; the permittee must also establish regularly scheduled maintenance activities or review and revision schedules.

The permittee must consider at least the following in developing the program: maintenance activities, maintenance schedules, and long-term inspection procedures for structural and non-structural stormwater controls to reduce floatable and other pollutants discharged from the MS4's separate storm sewers; controls for reducing or eliminating the discharge of pollutants from streets, roads, highways, municipal parking lots, maintenance and storage yards, fleet or maintenance shops with outdoor storage areas, salt/sand storage locations and snow disposal areas operated by the MS4, landfills and solid waste facilities and waste transfer stations; procedures for properly disposing of waste removed from the separate storm sewers and areas listed above (such as dredge spoil, accumulated sediments, floatable, and other debris); and procedures to assess the water quality impacts of various alternatives on new flood management projects and examine existing projects for incorporating additional water quality protection devices or practices. Operation and maintenance must be an integral component of all Stormwater Management Programs. The program shall incorporate the following sub-elements at a minimum:

3.2.6.1 Separate Storm Sewer System Maintenance Activities

The permittee must continue to regulate or perform maintenance on the MS4 system on an ongoing basis with the ultimate goal of preventing or reducing pollutant runoff from municipal operations. The program must establish the procedures for implementing a maintenance program covering all of the publicly owned or operated drainage system within the jurisdiction of the Memphis MS4. The maintenance program shall encompass the following points.

- Establish regular maintenance schedules prioritized by factors such as maintenance history and practices, MS4 program goals, citizen input and reports, and the severity of weather conditions.
- Include all inlet structures must be included in the regularly scheduled maintenance program.
- Continue/implement program of inspection and maintenance of all detention/treatment facilities to maintain satisfactory functionality.
- All maintenance procedures must consider water quality impacts.
- Continue/implement appropriate dewatering/disposal procedures for both the solid and liquid waste materials removed from the sewer system.
- Maintain records of the location, date of service, and an estimate of the amount of material removed during maintenance service.
- The Stormwater Management Plan for this sub-element must include a brief description of the method(s) used to prioritize maintenance activities and copies of the procedures indicated above.
- Include a summary of maintenance activities in the Annual Report.

All elements of this system maintenance program must be implemented within 24 months of the effective date of the permit.

3.2.6.2 Municipal activities and operations

Within 24 months of the permit effective date, the permittee must conduct an assessment of the City's operations and maintenance (O&M) activities. The assessment shall include an inventory of municipally-operated facilities within the jurisdiction of the MS4 that do not have an NPDES permit. The assessment shall include a review, and development if necessary, of each facility's overall O&M activities and any applicable inspection procedures, inspection checklists, SWPPP development, and good housekeeping procedures. The assessment must identify all significant materials associated with these activities that could reasonably be expected to be discharged as pollutants of concern to the MS4. Typical pollutants associated with these activities include metals, chlorides, hydrocarbons (e.g., benzene, toluene, ethylbenzene, xylene, and other solvents), *E. coli* (pathogen indicator), pesticides, sediment, and trash (see also [3.2.6.5](#)). The program shall detail the actions implemented by the permittee to reduce the discharge of these pollutants in stormwater.

The permittee shall visually inspect municipal facilities that have the potential to cause a substantial loading of pollutants to the MS4 (including but not limited to landfills, hazardous waste disposal facilities, salt storage facilities, solid waste handling and transfer facilities) quarterly to verify they are working properly and to maintain a log of these inspections that are made available for review by the permitting authority upon request.

The Plan for this sub-element shall document the pollution prevention measures that, when applied during municipal O&M activities are designed to reduce the discharge of pollutants in stormwater.

The results of the assessments and pollution prevention measures, including any remedial actions mandated by the MS4 and schedules for implementation, must be documented and submitted with the subsequent annual report.

3.2.6.3 Street Sweeping and Cleaning

The permittee must continue this program sub-element involving the operation of an ongoing, prioritized street sweeping program on roadways within the jurisdiction of the MS4. The program should only apply to streets within urban areas that have curbs and gutters or other areas where street design and configuration makes street sweeping a practical means of keeping materials out of the sewer system.

The Plan for this program element shall outline the MS4's methods for prioritizing, scheduling and assessing the effectiveness of the street sweeping program.

3.2.6.4 Flood Management

Within one year of the permit effective date, the permittee shall develop a process and schedule to assess the water quality impacts in the design of the permittee's new flood management projects that discharge to the MS4. The program must include consideration of controls that can be used to minimize the impacts to site water quality and hydrology while still meeting the project objectives.

The Plan will detail the process and schedule and include a list of flood control projects subject to this subpart.

A summary of control projects evaluated or updates to the evaluation process and/or schedule shall be included in the annual report.

3.2.6.5 Fuels, Oils, Toxic Materials, Pesticide, Herbicide, and Fertilizer Management

For the purposes of this sub-element, toxic and hazardous substances are defined as those substances for which the City is required to maintain a Material Safety Data Sheet according to 29 CFR Part 1910.2100.

Within 24 months of the permit effective date, the permittee shall develop Storm Water Pollution Prevention Plans (SWPPP) or equivalent plans in operational manuals, etc. for all municipally operated facilities that permanently store, impound, or maintain significant quantities of oils, toxic or hazardous materials, including materials with fertilizer value (quantities exceeding 110 gallons for liquids and 100 pounds for solids). This would also include sites that store or impound multiple vehicles or other riding equipment that may leak fluids, such as vehicle maintenance garages and impound lots with outside maintenance, storage, and/or work areas. Parking areas for employee and public vehicles are excluded from the requirements of this section as long as significant quantities of toxic or hazardous substances are not stored or otherwise handled on site.

In development and implementation of the SWPPP, the program must evaluate the materials used and activities performed on municipally owned public spaces such as parks, golf courses, easements,

public rights of way, and other open spaces for pollution prevention opportunities. The SWPPP development must also consider maintenance activities for the turf landscaped areas, which could include, as applicable: mowing, fertilization, pesticide application, and irrigation. Typical pollutants include sediment, nutrients, hydrocarbons, pesticides, herbicides and organic debris.

The permittee must include in the Plan the following practices, as appropriate, to minimize landscaping-related pollutant generation:

1. Educational activities, permits, certifications, and/or other measures for municipal applicators.
2. Integrated pest management measures that rely on non-chemical solutions, including:
 - Use of native plants
 - Keeping clippings and leaves away from waterways and out of the street using mulching, composting
 - Limiting application of herbicides and pesticides and fertilizers if precipitation is forecasted within 24 hours or as specified in label instructions
 - Limiting or replacing herbicide and pesticide use (e.g., manual weed and insect removal)
 - Limiting or eliminating the use of fertilizers, or, if necessary, prohibiting application within 5 feet of pavement, 25 feet of a storm drain inlet, or 50 feet of a waterbody
 - Reducing mowing of grass to allow for greater pollutant removal, but not jeopardizing motorist safety
3. Schedules for chemical application that minimize the discharge of such constituents due to irrigation and expected precipitation.
4. The collection and proper disposal of unused pesticides, herbicides, and fertilizers.

3.2.6.6 Contractor Requirements and Oversight

The program for this sub-element imposes requirements for the oversight of contractors hired to perform municipal maintenance activities on all new procurements.

The Plan for this program sub-element must include requirements for contractors to comply with all of the stormwater control measures, good housekeeping practices, and facility-specific stormwater management standard operating procedures.

3.2.6.7 Monitor and Control Industrial, Commercial and High Risk Runoff

The permittee shall develop and implement a program to monitor and control pollutants in runoff from the following industrial, commercial and high risk runoff facilities that discharge to the MS4:

- municipal landfills;
- hazardous waste treatment, storage and disposal facilities;
- industries subject to reporting requirements pursuant to SARA Title III section 313; and
- industrial and commercial facilities that the permittee determines are contributing a substantial loading of pollutants to the municipal separate storm sewer system.

The permittee shall develop and maintain an inventory of the high risk industrial and commercial facilities. The inventory should include the facility's name, address, a description (such as SIC code)

which best reflects the principal products or services provided by each facility, pollutants potentially generated by the site/source, and information on the receiving storm drain and waterbody. The inventory shall be updated at least yearly and provide a list in each Annual Report of any high risk facilities that have been added to the inventory. A summary describing the industrial and commercial facilities that have the potential to contribute a substantial loading of pollutants to the MS4 (bullet number 4 above) should be included in each Annual Report. The following EPA web sites to the SARA section 313 chemical *List of Lists* (<http://www.epa.gov/emergencies/tools.htm>), type of industry list and general information (http://www.michigan.gov/documents/deq/deq-oppga-saraguidebook-chap4_287941_7.pdf), and the EPA TRI reporting industry lists (http://iaspub.epa.gov/triexplorer/tri_release.chemical) are included for the permittee's reference.

The permittee shall inspect all of the high risk runoff facilities defined in this part at least once every three years. The permittee shall verify that industrial facilities implement BMPs, minimize exposure, follow good housekeeping practices, and manage stormwater runoff. The permittee shall establish and follow procedures for these routine inspections. The program must conduct and document inspector training annually. The designated industrial inspector(s) shall be adequately trained on industrial stormwater inspection. The program may allow training to include performing joint inspections with TDEC staff.

3.3. Stormwater Monitoring & Sampling Program

The monitoring program is intended to provide data to refine the estimation of pollutant loading discharged from the MS4, assist in determining the effectiveness of the stormwater management program (SWMP) in improving water quality, and help to identify local sources of discharges to the MS4 where those discharges may adversely affect water quality. To these ends, the overall monitoring program includes wet weather monitoring to refine pollutant loading estimates and evaluate BMP operations; ambient instream chemical and biological, impaired receiving stream, and instream visual monitoring to assess program effectiveness and the state of water quality in receiving streams; and field screening, inspection and monitoring to identify the sources of illicit discharges and potentially harmful industrial and commercial discharges within the jurisdiction of the MS4.

3.3.1. Wet Weather Outfall Discharge Monitoring

The permittee shall perform wet weather outfall monitoring to derive Event Mean Concentrations (EMCs) for specified pollutant parameters for significant land use categories. The EMC is broadly defined as the total constituent mass discharged from a given entity (in this case all land of a certain use within the MS4) divided by the total volume of runoff (discharge) from the entity for a given 'event'. This is a highly flexible tool primarily because the 'entity' can be changed from a land use type to an outfall, to a watershed, or any other feature of the city that the MS4 would like to evaluate. For this permit, the EMC values can be used to estimate pollutant loading from outfalls, entire watersheds, and, eventually, for the entire MS4. Wet weather sampling sites will be chosen to represent individual land uses and which will, in turn, be used to represent the MS4 wide concentration of a pollutant in a drainage area consisting of that particular land use in entire watersheds (*Table 1*). The sampling points may be located within the same watersheds as long as representative land use data is obtained that can be extrapolated to calculate pollutant loadings across watersheds within the city. The following locations have been identified as preliminary land use sampling points. Adjustments to wet weather monitoring locations shall be coordinated with the local Environmental Field Office.

Table 1. Outfall Wet Weather Monitoring Location Summary

Type	Location	Coordinates	Waterbody	Frequency
Residential	Hodge Road at Whiteville Ave.	35° 01' 36.7" N and 90° 02' 55.82" W	Nonconnah Creek	3 storm events per year at least 1 month apart across different seasons
Commercial	Coleman Rd south of Austin Peay	35° 12' 49" N and 89° 55' 00.05" W	Wolf River	3 storm events per year at least 1 month apart across different seasons
Industrial	Warford St dedicated sampling point	35° 10' 41" N and 89° 57' 36.86" W	Wolf River	3 storm events per year at least 1 month apart across different seasons
Transportation	Greyhound Bus Terminal at Airways Blvd. and Brooks Rd.	35° 3' 5.01" N and 90° 0' 30.20" W	Nonconnah Creek	3 storm events per year at least 1 month apart across different seasons
Open/Undeveloped	Bert Ferguson Park on Trinity Road	35° 8' 25.25" N and 89° 46' 46.04" W	Wolf River	3 storm events per year at least 1 month apart across different seasons

A narrative description shall be provided of the date and duration of the storm event(s) sampled, rainfall estimates of the storm event which generated the sampled discharge and the duration between the storm event sampled and the end of the previous measurable (greater than 0.1 inch rainfall) storm event. The sampling methodology shall, at a minimum, obtain a first flush sample and a 1 hour post-first flush grab. First flush sample should be obtained within 30 minutes of commencement of discharge, or as soon as practicable thereafter.

3.3.2. Monitoring Parameters

Table 2. At a minimum the wet weather monitoring and instream ambient monitoring shall include the following parameters:

PARAMETERS FOR WET WEATHER MONITORING	
<i>E. coli</i>	biochemical oxygen demand (BOD ₅)
total suspended solids (TSS)	chemical oxygen demand (COD)
total dissolved solids (TDS)	dissolved phosphorus
total ammonia nitrogen (as N)	total phosphorus
nitrite/nitrate	total Kjeldahl nitrogen
oil and grease	total recoverable chromium
total recoverable copper	total recoverable lead
total recoverable nickel	total recoverable zinc
pH	total hardness

The seasonal pollutant load can be broadly defined as the EMC for a given entity (in this case a wet weather monitoring site) over a particular time period (in this case a season). For the purposes of the monitoring section of the permit, the seasons are defined as follows; fall/winter (November - February), spring (March - June), summer (July - October). The permittee should provide the seasonal pollutant load (SPL) and the event mean concentration (EMC) for all parameters listed in

Table 2, except pH, for each wet weather site. The permittee should document the method used to calculate SPL and EMC. The SPL and EMC should be included in the Annual Report for the fifth year of the permit.

3.3.3. In-Stream Ambient Monitoring

3.3.3.1 Development of Ambient Monitoring Program

The in-stream ambient monitoring program provides program wide effectiveness information through monitoring of general water quality parameters across major watersheds within the MS4's jurisdiction. Furthermore, the MS4 is encouraged to integrate this monitoring program with the other stream monitoring programs (biological, *TMDL (Total Maximum Daily Load)*, and impaired stream) to minimize duplication of field trips, as well as to provide comprehensive data to be used to characterize the MS4's watersheds. Proposed revisions to any component of the program shown in Table 3, must be submitted to the EFO for review and approval.

3.3.3.2 Monitoring locations and frequencies

Monitoring locations and frequencies will be focused on specific targeted watersheds and will rotate each year of the permit according to Table 3 so that quality data can be collected on numerous watersheds within the city. The ambient samples will be taken from main stems of waterbodies when there has been a preceding period of at least 72 hours of dry weather. All instream monitoring should be conducted in accordance with the division's publication Quality Systems Standard Operating Procedure for Chemical and Bacteriological Sampling of Surface Water available at the web site http://www.tn.gov/environment/water/water-quality_publications.shtml. The following stream sampling schedule has been chosen as the initial ambient monitoring plan. Changes to the monitoring plan will be coordinated with the division (EFO).

Table 3. Dry Weather In-stream Ambient Monitoring

Year	Waterbody	Location Description	Frequency
July 2012 – June 2013	Loosahatchie River	At least one sampling point within the main stem of the stream	Once per season, 3/yr
July 2012 – June 2013	Todd Branch	At least one sampling point within the main stem of the stream	Once per season, 3/yr
July 2013 – June 2014	Wolf River	At least one sampling point within the main stem of the stream	Once per season, 3/yr
July 2013 – June 2014	Harrington Creek	At least one sampling point within the main stem of the stream	Once per season, 3/yr
July 2013 – June 2014	Cypress Creek	At least one sampling point within the main stem of the stream	Once per season, 3/yr
July 2013 – June 2014	Fletcher Creek	At least one sampling point within the main stem of the stream	Once per season, 3/yr
July 2014 – June 2015	Cypress Creek (Wolf River watershed)	At least one sampling point within the main stem of the stream	Once per season, 3/yr
July 2015 – June 2016	Nonconnah Creek	At least one sampling point within the main stem of the stream	Once per season, 3/yr
Year	Waterbody	Location Description	Frequency
July 2015 – June 2016	Johns Creek	At least one sampling point within the main stem of the stream	Once per season, 3/yr

July 2015 – June 2016	Hurricane Creek	At least one sampling point within the main stem of the stream	Once per season, 3/yr
July 2015 – June 2016	Days Creek	At least one sampling point within the main stem of the stream	Once per season, 3/yr
July 2015 – June 2016	Cane Creek	At least one sampling point within the main stem of the stream	Once per season, 3/yr
July 2016 – June 2017	Loosahatchie River	At least one sampling point within the main stem of the stream	Once per season, 3/yr
July 2016 – June 2017	Todd Branch	At least one sampling point within the main stem of the stream	Once per season, 3/yr

For the purposes of this section of the permit, the seasons are defined by as follows; fall/winter (November - February), spring (March – June), summer (July – October).

3.3.3.3 Monitoring Parameters

Parameters are the same as the parameters for wet weather monitoring in section 3.3.2.

3.3.4. TMDL Monitoring

At a minimum, for pathogen TMDLs, the permittee must sample all streams listed in the approved TMDL that currently are on the *303(d) List* for pathogens. Sampling shall include the collection of five samples utilizing methods identified in the division's [Quality Systems Standard Operating Procedure for Chemical and Bacteriological Sampling of Surface Water](#), revised December 2009, and corresponding flow measurements in a thirty-day period (to establish a geometric mean) and be performed within the months of June to September and completed once in a five year period. For streams with a nutrient, siltation/sedimentation and/or habitat alteration TMDL, the permittee must sample using Semi-Quantitative Single Habitat (SQSH) Method as identified in the division's [Quality System Standard Operating Procedure for Macroinvertebrate Stream Surveys](#), revised October 2006. At least one sample per stream segment on the *303(d) List* also listed in the TMDL must be collected in a five year period. Visual stream surveys should be performed immediately up- and down-stream from the outfalls discharging into a TMDL listed stream. All TMDL stream segments must be surveyed in a five-year period.

For stream segments subject to TMDLs for parameters other than siltation, habitat alteration or pathogens, the permittee shall perform analytical monitoring as prescribed in the TMDL.

3.3.5. Impaired Receiving Stream Monitoring

For stream segments identified as being impaired (on the *303 (d) List*) for siltation/sedimentation and/or habitat alteration, biological stream sampling must be performed utilizing the Semi-Quantitative Single Habitat (SQSH) Method as identified in the division's [Quality System Standard Operating Procedure for Macroinvertebrate Stream Surveys](#), revised October 2006. At least one sample per stream segment must be collected, with all segments in the MS4 jurisdiction sampled in a five-year period.

For stream segments identified as being impaired for pathogens, bacteriological stream sampling must be performed utilizing methods identified in the division's [Quality Systems Standard Operating Procedure for Chemical and Bacteriological Sampling of Surface Water](#), revised December 2009. Sampling shall include the collection of five samples and corresponding flow measurements, within a

thirty-day period (to establish a geometric mean), and be performed during summer (June through September). Bacteriological sampling must be performed such that all pathogen-impaired segments in the MS4 jurisdiction are sampled within a five-year period.

3.3.6. **Watershed Characterization**

Using the wet weather and stream monitoring data collected, the permittee will prepare a watershed management data summary that characterizes the watersheds monitored. Results of watershed characterization monitoring shall be submitted with each Annual Report. Specifically, *E. coli* and total suspended solids (TSS) shall be components of the watershed characterization monitoring.

During the permit cycle, the permittee shall select a watershed of importance to the community that is in need of improvement in water quality and devise a management plan that focuses on improving the chosen watershed. The watershed management plan shall incorporate components of analytical monitoring, assessment of the monitoring data, design and implementation of BMPs to address specific pollutants of concern, master planning of critical impervious areas, and assessments of targeted BMP effectiveness. The entire watershed management plan shall be completed by the end of year five of the permit cycle. The Watershed Management Plan shall be drafted in a format that can be extrapolated to other watersheds within the city.

3.3.7. **Illicit Discharge Field Sampling and Screening (Dry Weather)**

The permittee must perform a systematic inspection of system wide outfalls for illicit discharges at least once during the term of the permit. This inspection program must be capable of identifying illicit discharges as identified in the guidance manual [Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments](http://www.epa.gov/npdes/pubs/idde_manualwithappendices.pdf) (http://www.epa.gov/npdes/pubs/idde_manualwithappendices.pdf) including, but not limited to, sewage and septage, wash water (as from laundries, carwashes, homes, etc.,) and liquid wastes (such as paint, oil, and process water (from commercial and industrial sources like radiator fluid and plating bath waste, for instance). This may be accomplished by using multiple outfall screening techniques to be chosen by the permittee and approved by the division (EFO). These techniques may include visual observation, sampling, remote monitoring, infrared aerial photography, or other methods used in any appropriate combination to conduct a systematic, thorough, and comprehensive program to identify illicit discharges.

The process for selecting outfalls for screening must be representative of locations in all land uses and also representative of multiple areas zoned for each land use across the entire area of the MS4. The outfalls should be located in areas that would be known or suspected of containing IDDE 'hot spots,' especially in those areas in which illicit discharges have been reported. Additionally, outfalls should also be spaced separately in areas divided by approximately an average of one-third square mile. The maximum number of outfalls to be screened during this permit cycle is 500.

The permittee shall develop an outfall inventory of all outfalls selected for field screening. Each outfall inspected shall be "field" inspected in dry weather conditions, with at least 72 hours of preceding dry weather conditions. Each identified outfall shall be inspected to determine whether dry-weather flow is present. If dry-weather flow is present at the outfall, the permittee shall use appropriate visual inspection techniques and/or appropriate field equipment to determine if the quality of the water is within the normal water quality benchmark range. If testing of the discharge is within

typical benchmark levels, the discharge can be considered to be groundwater and a second analysis would not be required. If pollutants are detected, the flow shall be tracked to the source if possible.

The list of inspection techniques and sampling parameters used to identify sanitary, commercial, industrial, and other sources from other categories during the field screening should be included in the Plan. Corresponding benchmark concentrations developed during the screening process should be included in the Plan as well. A list of parameters, results of sampling and benchmark concentrations used shall be summarized in an Annual Report corresponding to the monitoring period.

The MS4 must submit the chosen outfall selection screening techniques to the EFO in writing within 6 months of the effective date of this permit. The division will notify the MS4 of the method's approval status within 90 days of receipt.

3.3.8. Industrial Monitoring Program

The permittee shall sample stormwater runoff, at a minimum, once per permit year from a facility permitted through the Tennessee Multi Sector Permit (TMSP) for industrial stormwater runoff or sites permitted through the Concrete Ready Mix General Permit. The permittee shall sample at least one outfall at the designated facility for the minimum parameters specified in the facility's permit.

3.3.9. Permanent Stormwater Management BMP Monitoring

The permittee shall design and implement a permanent stormwater management BMP monitoring program for purposes of assessing the pollution reduction effects of post-construction BMPs. The program should consider a broad range of BMPs including but not limited to bioretention, dry detention, proprietary water quality units, green roofs, wet ponds, and pervious pavement sites. At a minimum, analytical data must be collected from two BMPs that will be sampled at least 5 times each prior to the end of Year 5 of the permit term. Sampling should occur during separate significant storm events. Minimum parameters to collect shall include TSS, nutrients, and oil and grease collected at the inlet and outfall. It is understood that green roofs and pervious pavement pose a more difficult BMP to sample so flow reduction may be calculated in lieu of standard chemical analysis. As a component of the BMP monitoring plan, all post-construction BMPs shall be mapped to their respective watersheds.

3.4. Reviewing and Updating Stormwater Management Programs

3.4.1. Annual Review and Update of Stormwater Management Program

The permittee must perform a review of the Stormwater Management Program, which includes all aspects of the Stormwater Management Plan, in preparation of the annual report. This annual effectiveness assessment must:

- a) Use the monitoring and assessment data described in subparts 3.2 and 3.3 to specifically assess the effectiveness of each of the following:
 - Each significant activity/control measure or type of activity/control measure implemented;
 - Implementation of each major component of the SWMP
 - Implementation of the SWMP as a whole.
- b) Identify and use measurable goals, assessment indicators, and assessment methods for each of the items listed under paragraph a) (above).

- c) Document the permittee's compliance with permit conditions.

Based on the results of effectiveness assessment, the permittee must annually review its activities or control measures to identify modifications and improvements needed to maximize SWMP effectiveness as necessary to achieve compliance with this permit. The permittee must develop and implement a plan and schedule to address the modifications and improvements identified by the assessment. MS4 and Municipal activities/control measures that are ineffective must be replaced or improved upon by implementation of more effective activities/control measures.

As part of its annual reports, the permittee must report on its SWMP effectiveness assessment as implemented under this subpart of the permit.

Additionally, if the permittee determines that an activity/control measure in the SWMP is ineffective at any time during the permit, the permittee may modify or replace the activity/control measure at any time during the permit cycle. The permittee must report the modification/replacement, along with a brief justification, in the next scheduled Annual Report.

However, the permittee may not eliminate a SWMP activity/control measure without the written approval of the division.

3.4.2. Stormwater Management Program Updates Required by the Division

The division may require changes to the Stormwater Management Program as needed. Changes requested by the division must be made in writing to the MS4, set forth the time schedule for the permittee to develop the changes, and offer the opportunity to propose alternative program changes to meet the objective of the requested modification. All changes required by the division will be made in accordance with [40 CFR §124.5](#), [40 CFR §122.62](#), or as appropriate [40 CFR §122.63](#).

3.4.3. Transfer of Ownership, Operational Authority, or Responsibility

The permittee must implement the Stormwater Management Program in all new areas added to the MS4 as expeditiously as practicable, but not later than one year from addition of the new areas. Implementation may be accomplished in a phased manner to allow additional time for controls that cannot be implemented immediately.

Within 90 days of a transfer of ownership, operational authority, or responsibility for Stormwater Management Program implementation, the permittee must have a plan for implementing the Stormwater Management Program in all newly added areas. The plan may include schedules for implementation. Information on all new annexed areas and any resulting updates required to the Stormwater Management Program must be included in the annual report.

3.5. Enforcement Procedures

3.5.1. Development of Enforcement Response Procedures

Within 18 months of permit effective date, the permittee must develop and implement enforcement response procedures. The procedures must set out the MS4's potential responses to violations and address repeat violations through progressive enforcement as needed to achieve compliance. These enforcement responses should be commensurate with the nature of the violation and must include enforcement responses progressing up to the maximum civil and criminal penalties as described in

T.C.A. § 69-3-101, et. seq. The enforcement response procedures or methods must address all violations of prohibitions and requirements applicable to this permit that are contained in the City's statutes, codes or other control mechanisms as well as other violations of the permit. The enforcement response procedures or methods must be referenced by or included in the City's statutes, codes or other control mechanisms.

The enforcement responses may include actions such as written notices, citations with administrative penalties, stop work orders, withholding of plans approvals or other authorizations, or any other administrative or judicial action.

3.5.2. Potentially Harmful and/or Unpermitted Activities and/or Discharge Referrals

The permittee shall notify the Environmental Field Office – Memphis – Division of Water Resources of permitted or unpermitted activities that have caused or are causing discharge of pollutants directly to waters of the state that may have caused or have the potential to cause a detrimental impact on water quality. Notification may be by phone to (901) 371-3000, via email, or in writing to 8383 Wolf Lake Dr, Bartlett, TN, 38133, at the permittee's discretion. The notification should take place in a timely fashion and should be congruent with the severity of the perceived impact on water quality.

For those construction projects or industrial facilities subject to the TNR100000 (the NPDES general permit for stormwater discharges from construction activity) or TNR050000 (the NPDES general permit for stormwater discharges from industrial activity) that discharge to the MS4, the permittee must notify the division as follows:

If the MS4 becomes aware that a construction activity, or an industrial stormwater discharge, exists and that the discharge must be permitted under an NPDES permit but is not so permitted, the MS4 must notify TDEC (within 30 days or sooner if discharges may cause a significant impact on water quality) of this situation by supplying the following information to the local EFO:

- Construction project or industrial facility location,
- Name of owner or operator.
- Estimated construction project size or type of industrial activity (including SIC code if known),
- Records of communication with the owner or operator regarding filing requirements.

If the MS4 has not been able, through its enforcement mechanisms and protocol, to bring an NPDES-permitted discharge into compliance with the MS4s stormwater- and water pollution-related ordinances, then the MS4 must notify TDEC (within 30 days or sooner if discharges may cause a significant impact on water quality), at the local EFO, of this situation. In making such referrals, the MS4 must provide, at a minimum, the following:

- Construction project or industrial facility location
- Name of owner or operator
- Estimated construction project size or type of industrial activity (including SIC code if known)
- Records of communication with the owner or operator regarding the violation, including at least two follow-up inspections, two warning letters or notices of violation, and any response from the owner or operator.

3.5.3. **Enforcement Tracking**

The permittee will track instances of non-compliance either in paper files or electronically. The enforcement case documentation must include, at a minimum, the necessary information for the permittee to track non-compliance.

3.5.4. **Recidivism Reduction**

The permittee will implement a program to identify chronic violators of SWMP component and take actions with the objective to reduce the rate of noncompliance recidivism. The permittee will track the known violations, apply incentives and/or disincentives, and/or increase the inspection frequency at the operator's sites with the permittee having the right to exercise its professional discretion in determining the appropriate course of action.

4. **MONITORING, RECORDKEEPING, ASSESSMENT AND REPORTING**

4.1. **Analytical monitoring**

When the permittee conducts monitoring of stormwater discharges, or of receiving waters, the permittee must comply with the following:

Representative monitoring. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

Test Procedures. Monitoring results must be conducted according to test procedures approved under [40 CFR §136](#).

Records of monitoring information shall include:

- The date, exact location, and time of sampling or measurements;
- An identification of the individual(s) who performed the sampling or measurements;
- The date(s) analyses were performed;
- An identification of the individual(s) who performed the analyses;
- The analytical techniques or methods used; and
- The results of such analyses.

4.2. **Non-analytical monitoring**

Visual Stream Surveys and Impairment Inventories must be performed on streams impaired for siltation, habitat alteration and pathogens in order to identify and prioritize MS4 stream impairment sources. It is strongly recommended that visual stream surveys be performed throughout the entire HUC-12 sub watershed of a stream segment identified as being impaired. At a minimum, a visual stream survey must be performed immediately upstream and downstream of each MS4 outfall that discharges into an impaired stream segment. The permittee shall refer to existing survey protocols such as the ones available through the [Environmental Protection Agency](#), [Natural Resources Conservation Service](#) and the [State of Maryland Department of Natural Resources](#) or using the Stream Corridor Assessment Program (SCORE). The permittee has the flexibility to select or modify a protocol to complement the existing MS4 program. All impaired stream segments in the MS4 jurisdiction must be surveyed in a five-year period. The results of non-analytical monitoring will be reported in the annual report.

Records of non-analytical monitoring of stormwater discharges shall include:

- The date(s), exact location, and time of observation/monitoring;
- An identification of the individual(s) who performed the observation/monitoring;
- A description of the protocol employed;
- Documentation of findings, including a prioritized written description, photographs and corrective action plan and timeline.

4.3. Recordkeeping

The permittee must retain records of monitoring information, including, calibration and maintenance records and original strip chart recordings for continuous monitoring instrumentation, copies of reports required by this permit, a copy of the NPDES permit, and records of data used to complete the application for this permit, for a period of at least three years from the date of the sample, measurement, report or application, or for the term of this permit, whichever is longer. The division may extend this period with good cause.

The permittee must submit records to the division only when specifically asked to do so or as required under subpart 4.4. The permittee must retain a copy of the Stormwater Management Plan. A copy of the permit must be included as part of the Plan. The Plan shall be kept in a location accessible to the division. The permittee must make its records which are otherwise not confidential or privileged, including the application and the Plan, available to the public upon written request.

4.4. Reporting

The permittee must submit an annual report to Tennessee Department of Environment and Conservation Memphis Environmental Field Office by 6 months following the city's fiscal year⁵. The permittee may fulfill this requirement by submitting the report via e-mail with a hard copy delivered later by USPS or other delivery service. The annual report must be posted to the City's web site, or in some other way be made available to the general public. The annual report form is found in Appendix A. The permittee may, in lieu of this form, develop an alternative Annual Report form so long as it contains a similar format and all of the required information. The permittee must obtain approval from the division prior to using an alternative Annual Report Form. The permittee may also submit narrative attachments as supplement material to the Annual Report Form.

5. STANDARD PERMIT CONDITIONS

5.1. Duty to Comply

⁵ In the past two permit cycles, the permit year has coincided with the fiscal year (July 1 - June 30). Therefore, all reporting/recordkeeping for the MS4 program has been set up to coincide with the fiscal year. It is the intent of this permit for annual reporting periods to continue to coincide with fiscal years so there is no confusion relating to compliance considerations associated with "permit years."

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act (CWA) and/or the Tennessee Water Quality Control Act (TWQCA) and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

5.1.1. Penalties for Violations of Permit Conditions

Pursuant to T.C.A. § 69-3-115 of The Tennessee Water Quality Control Act of 1977, as amended:

Any person who violates an effluent standard or limitation or a water quality standard established under this part (T.C.A. § 69-3-101, et. seq.); violates the terms or conditions of this permit; fails to complete a filing requirement; fails to allow or perform an entry, inspection, monitoring or reporting requirement; violates a final determination or order of the board, panel or commissioner; or violates any other provision of this part or any rule or regulation promulgated by the board, is subject to a civil penalty of up to ten thousand dollars (\$10,000) per day for each day during which the act or omission continues or occurs;

Any person unlawfully polluting the waters of the state or violating or failing, neglecting, or refusing to comply with any of the provisions of this part (T.C.A. § 69-3-101, et. seq.) commits a Class C misdemeanor. Each day upon which such violation occurs constitutes a separate offense;

Any person who willfully and knowingly falsifies any records, information, plans, specifications, or other data required by the board or the commissioner, or who willfully and knowingly pollutes the waters of the state, or willfully fails, neglects or refuses to comply with any of the provisions of this part (T.C.A. § 69-3-101, et. seq.) commits a Class E felony and shall be punished by a fine of not more than twenty-five thousand dollars (\$25,000) or incarceration, or both.

Nothing in this permit shall be construed to relieve the discharger from civil or criminal penalties for noncompliance. Notwithstanding this permit, the discharger shall remain liable for any damages sustained by the State of Tennessee, including but not limited to fish kills and losses of aquatic life and/or wildlife, as a result of the discharge of treated wastewater to any surface or subsurface waters. Additionally, notwithstanding this permit, it shall be the responsibility of the discharger to conduct its wastewater treatment and/or discharge activities in a manner such that public or private nuisances or health hazards will not be created. Furthermore, nothing in this permit shall be construed to preclude the State of Tennessee from any legal action or to relieve the discharger from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or the Federal Water Pollution Control Act.

5.2. Duty to Reapply

Permittee is not authorized to discharge after the expiration date of this permit. In order to receive authorization to discharge beyond the expiration date, the permittee shall submit such information and forms as are required to the Director of Water Resources (the "Director") no later than 180 days prior to the expiration date. Such applications must be properly signed and certified.

5.3. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for you in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

5.4. Duty to Mitigate

You must take all reasonable steps to minimize or prevent any discharge in violation of this permit that has a reasonable likelihood of adversely affecting human health or the environment.

5.5. Duty to Provide Information

You must furnish to the division, within a time specified by the division, any information that the division may request to determine compliance with this permit, including any and all records required by the permit.

5.6. Other Information

If the permittee becomes aware that it has failed to submit any relevant facts in the application or submitted incorrect information in the application or in any other report to the division, the permittee must promptly submit such facts or information.

5.7. Signatory Requirements

The application, reports, certifications, or information submitted to the division, or that this permit requires be maintained by you shall be signed, dated and certified as follows:

For a corporation. By a responsible corporate officer. For the purpose of this section, a responsible corporate officer means:

(1) A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or

(2) the manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

NOTE: The division does not require specific assignments or delegations of authority to responsible corporate officers. The division will presume that these responsible corporate officers have the requisite authority to sign permit applications unless the corporation has notified the director to the contrary. Corporate procedures governing authority to sign permit applications may provide for assignment or delegation to applicable corporate positions rather than to specific individuals.

For a partnership or sole proprietorship. By a general partner or the proprietor, respectively; or

For a municipality, State, Federal, or other public agency. By either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes: (i) The chief executive officer of the agency, or (ii) a senior executive officer having

responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of EPA).

5.7.1. Reports and other information

All reports required by the permit and other information requested by the division or authorized representative of the division shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:

5.7.1.1 Signed authorization

Person described in subpart 5.7 submitted written authorization for a specific position or individual to the division.

5.7.1.2 Authorization with specified responsibility

The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of manager, operator, superintendent, or position of equivalent responsibility for environmental matter for the regulated entity.

5.7.1.3 Changes to authorization

If an authorization is no longer accurate because a different operator has the responsibility for the overall operation of the MS4, a new authorization satisfying the requirement of 5.7.1.2 must be submitted to the division prior to or together with any reports, information, or applications to be signed by an authorized representative.

5.7.2. Certification

Any person signing documents under subpart 5.7 shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

5.8. Property Rights

The issuance of this permit does not convey any property rights of any sort, or any exclusive privilege, nor does it authorize any injury to private property nor any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations.

5.9. Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related equipment) that are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. Proper operation and maintenance requires the operation of backup or auxiliary facilities or similar systems, installed by a permittee only when necessary to achieve compliance with the conditions of the permit.

5.10. Inspection and Entry

The permittee must allow the division or an authorized representative (including an authorized contractor acting as a representative of the division) upon the presentation of credentials and other documents as may be required by law, to do any of the following:

- Enter your premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of this permit;
- Have access to and copy at reasonable times, any records that must be kept under the conditions of this permit;
- Inspect at reasonable times any facilities or equipment (including monitoring and control equipment) practices, or operations regulated or required under this permit; and
- Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the CWA, any substances or parameters at any location.

5.11. Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause. Filing of a request for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

5.12. Permit Transfers

This permit is not transferable to any person except after written notice to the division and written authorization/concurrence by the division. The division may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under the Act.

5.13. Anticipated Noncompliance

The permittee must give advance notice to the division of any planned changes in the permitted MS4 or activity, which may result in noncompliance with this permit.

5.14. State Environmental Laws

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable Tennessee law or regulation under authority preserved by the Section 510 of the Clean Water Act. No

condition of this permit shall release the permittee from any responsibility or requirements under other environmental statutes or regulations.

5.15. Severability

The provisions of this permit are severable, and if any provision of this permit or the application of any provision of this permit to any circumstance is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

5.16. Procedures for Modification or Revocation

Permit modification or revocation will be conducted according to [40 CFR §122.62](#), [§122.63](#), [§122.64](#) and [§124.5](#).

Only those portions of the Stormwater Management Program specifically required as permit conditions shall be subject to the modification requirements of 40 CFR §124.5. Addition of components, controls, or requirements by the permittee(s) and replacement of an ineffective or infeasible [BMP](#) implementing a required component of the Stormwater Management Program with an alternate [BMP](#) expected to achieve the goals of the original [BMP](#) shall be considered minor changes to the Stormwater Management Program and not modifications to the permit.

5.17. Planned Changes

The permittee shall give notice to the director as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when:

- The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR 122.29(b); or
- The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements under 40 CFR 122.42(a)(1).

6. DEFINITIONS

All definitions contained in Section 502 of the Act and [40 CFR §122](#) shall apply to this permit and are incorporated herein by reference. For convenience, simplified explanations of some regulatory/statutory definitions have been provided, but in the event of a conflict, the definition found in the Statute or Regulation takes precedence.

Analytical monitoring refers to monitoring of water bodies (streams, ponds, lakes, etc.) or of stormwater, according to [40 CFR 136](#) “Guidelines Establishing Test Procedures for the Analysis of Pollutants,” or to state- or federally established protocols for biomonitoring or stream bioassessments.

Best Management Practices (BMPs) means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the state. BMPs also include treatment requirements, operating procedures, and practices to control runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

Brownfield means real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant.

Co-permittees are operators who by mutual consent request joint and severed responsibility for coverage under this general permit.

Construction Site Operator for the purpose of this permit and in the context of stormwater associated with construction activity, means any person associated with a construction project that meets either of the following two criteria:

- a) This person has operational or design control over construction plans and specifications, including the ability to make modifications to those plans and specifications. This person is typically the owner or developer of the project or a portion of the project, and is considered the primary permittee; or
- b) This person has day-to-day operational control of those activities at a project which are necessary to implement compliance with a SWPPP for the site or other permit conditions. This person is typically a contractor or a commercial builder who is hired by the primary permittee, and is considered a secondary permittee.

It is anticipated that at different phases of a construction project, different types of parties may satisfy the definition of the “construction site operator.”

Control Measure (or control(s)) as used in this permit, refers to any Best Management Practice or other method used to prevent or reduce the discharge of pollutants to waters of the state.

CWA or The Act means Clean Water Act (formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972) Pub.L.92-500, as amended Pub.L.95-217, Pub.L.95-576, Pub.L.96-483 and Pub.L.97-117, 33 U.S.C.1251 et seq.

Director means the director of the Tennessee Division of Water Resources, or an authorized representative.

Discharge, when used without a qualifier, refers to “discharge of a pollutant” as defined at [40 CFR §122.2](#).

Discharge-related activities include: activities which cause, contribute to, or result in stormwater point source pollutant discharges; and measures to control stormwater discharges, including the site, construction and operation of best management practices ([BMPs](#)) to control, reduce or prevent stormwater pollution.

Division means the Tennessee Department of Environment and Conservation, Division of Water Resources.

Exceptional Tennessee Waters are surface waters of the State of Tennessee that satisfy the characteristics as listed in [Rule 1200-4-3-.06](#) of the official compilation - rules and regulations of the State of Tennessee. Characteristics include waters within state or national parks, wildlife refuges, wilderness or natural areas; State or Federal Scenic Rivers; Federally-designated critical habitat; waters within an areas designated as Lands Unsuitable for Mining; waters with naturally reproducing

trout; waters with exceptional biological diversity or; other waters with outstanding ecological or recreational value as determined by the department.

Hot area means an area where land use or activities generate highly contaminated runoff, with concentrations of pollutants in excess of those typically found in stormwater. Examples might include operations producing concrete or asphalt, auto repair shops, auto supply shops, large commercial parking areas and restaurants.

Illicit Connection means any man-made conveyance connecting an illicit discharge directly to a municipal separate storm sewer.

Illicit Discharge is defined at [40 CFR §122.26\(b\)\(2\)](#) and refers to any discharge to a municipal separate storm sewer that is not entirely composed of stormwater, except discharges authorized under an NPDES permit (other than the NPDES permit for discharges from the MS4) and discharges resulting from fire fighting activities.

Impaired Waters means any segment of surface waters that has been identified by the division and approved by the EPA as failing to support classified uses. The division periodically compiles a list of such waters known as the *303(d) List*. The *303(d) List* is subsequently approved by EPA and published on the division's web site as the approved *303(d) List*.

Load Allocation (LA): The portion of a receiving water's loading capacity that is attributed either to one of its existing or future nonpoint sources of pollution or to natural background ([40 CFR §130.2\(g\)](#)).

Margin of Safety (MOS): The "MOS" accounts for uncertainty in the loading calculation. The MOS may not be the same for different water bodies due to differences in the availability and strength of data used in the calculations.

Maximum Extent Practicable (MEP): the technology-based discharge standard for Municipal Separate Storm Sewer Systems to reduce pollutants in stormwater discharges that was established by CWA §402(p). MS4 operators shall develop and implement their Stormwater Management Programs to reduce the discharge of pollutants to the maximum extent practicable, including management practices, control techniques and system, design and engineering methods, and such other provisions as the Administrator or the State determines appropriate for the control of pollutants.

Measurable degradation, - changes in parameters of waters that are of sufficient magnitude to be detectable by the best available instrumentation or laboratory analyses.

Monitoring refers to tracking or measuring activities, progress, results, etc.; and can refer to non-analytical monitoring for pollutants by means other than [40 CFR 136](#) (and other than state- or federally established protocols in the case of biological monitoring and assessments), such as visually or by qualitative tools that provide comparative values or rough estimates.

Municipal Separate Storm Sewer (MS4) is defined at [40 CFR §122.26\(b\)\(8\)](#) and means a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains):

- Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood

control district or drainage district, or similar entity, or a designated and approved management agency under section 208 of the CWA that discharges to waters of the state;

- Designed or used for collecting or conveying stormwater;
- Which is not a combined sewer; and
- Which is not part of a Publicly Owned Treatment Works (POTW) as defined at [40 CFR §122.2](#).

NOI is an acronym for “Notice of Intent” to be covered by this permit and is the mechanism used to “register” for coverage under a general permit.

Nonpoint Source is essentially any source of pollutant(s) that is not a point source. Examples are sheet flow from pastures and runoff from paved areas.

Owner or operator means the owner or operator of any “facility or activity” subject to regulation under the NPDES program.

Point Source means any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural stormwater runoff.

Priority construction activity shall be defined by the MS4, but shall include, at a minimum, those construction activities, as permitted through a local program, discharging directly into, or immediately upstream of, waters the state recognizes as impaired (for siltation or habitat alteration) or Exceptional Tennessee Waters.

Qualifying Local Program (QLP) is an MS4 Stormwater Management Program for discharges associated with construction activity that has been formally approved by the division as having met specific minimum program requirements, including those identified in [40 CFR 122.44\(s\)](#). The intent of the QLP is to establish a streamlined and efficient process for managing discharges of stormwater associated with construction activities by eliminating duplication of the effort between the MS4 and the division.

Qualifying Rain Event is the minimum rain storm event that may be sampled to meet the wet weather and other requirements of this permit. All wet weather samples shall be collected from the discharge resulting from a storm event that is greater than 0.1 inches in magnitude and that occurs at least 72 hours from the previously measurable (greater than 0.1 inch rainfall) storm event. The required 72-hour storm event interval is waived where the preceding measurable storm event did not result in a measurable discharge from the facility. The required 72-hour storm event interval may also be waived where the permittee documents that less than a 72-hour interval is representative for local storm events during the season when sampling is being conducted. If a grab sample is specified, it should be taken during the first 30 minutes of the discharge. If the collection of a grab sample during the first 30 minutes is impracticable, a grab sample can be taken during the first hour of the discharge, and the discharger shall submit with the monitoring report a description of why a grab sample during the first 30 minutes was impracticable.

Quarters are defined as calendar quarters; January – March, April – June, July – September, and October – December.

Significant Contributor is defined as a source of pollutants where the volume, concentration, or mass of a pollutant in a stormwater discharge can cause or threaten to cause pollution, contamination, or nuisance that adversely impact human health or the environment and cause or contribute to a violation of any applicable water quality standards for receiving water.

Significant Redevelopment means the alteration of developed land that disturbs one acre or more, or less than an acre if part of a larger common plan of development, and increases the site or building impervious footprint, or offers a new opportunity for stormwater controls. The term is not intended to include such activities as exterior remodeling, which would not be expected to cause adverse stormwater quality impacts.

Stormwater is defined at [40 CFR §122.26\(b\)\(13\)](#) and means stormwater runoff, snowmelt runoff, and surface runoff and drainage.

A **Stormwater Management Plan (Plan)** is a written compilation of the elements of the Stormwater Management Program. It is considered a single document, even though it actually consists of separate stand-alone components. There is no requirement for the Plan, or its portions, to be submitted to the division, unless requested by the division in writing.

Stormwater Management Program (SWMP) refers to a comprehensive program to manage the quality of stormwater discharged from the municipal separate storm sewer system.

A **Stormwater Pollution Prevention Plan (SWPPP)** is a written plan that includes site map(s), an identification of construction/contractor activities that could cause pollutants in the stormwater, and a description of measures or practices to control these pollutants. It must be prepared and approved before construction begins. In order to effectively reduce erosion and sedimentation impacts, Best Management Practices (BMPs) must be designed, installed, and maintained during land disturbing activities. The SWPPP shall be prepared in accordance with the [Tennessee Erosion and Sediment Control Handbook](#) or local BMP Manual, whichever is more stringent and protective of waters of the state. The handbook is designed to provide information to planners, developers, engineers, and contractors on the proper selection, installation, and maintenance of BMPs. The handbook is intended for use during the design and construction of projects that require erosion and sediment controls to protect waters of the state. It also aids in the development of SWPPPs and other reports, plans, or specifications required when participating in Tennessee's water quality regulations.

Stream means a surface water that is not a wet weather conveyance.

TMDL (Total Maximum Daily Load) in this permit generally refers to a study that quantifies the amount of a pollutant that can be assimilated in a water body, identifies the sources of the pollutant, and recommends regulatory or other actions to be taken to achieve compliance with applicable water quality standards based on the relationship between pollution sources and in-stream water quality conditions. A TMDL can be expressed as the sum of all point source loads (Waste Load Allocations), non-point source loads (Load Allocations), and an appropriate margin of safety (MOS), which takes into account any uncertainty concerning the relationship between effluent limitations and water quality:

$$\text{TMDL} = \Sigma \text{WLAs} + \Sigma \text{LAs} + \text{MOS}$$

The objective of a TMDL is to allocate loads among all of the known pollutant sources throughout a watershed so that appropriate control measures can be implemented and water quality standards

achieved. [40 CFR §130.2 \(i\)](#) states that TMDLs can be expressed in terms of mass per time, toxicity, or other appropriate measure.

•

Waste load Allocation (WLA): The portion of a receiving water's loading capacity that is allocated to one of its existing or future point sources of pollution. [WLA](#)s constitute the type of water quality-based effluent limitation. ([40 CFR §130.2\(h\)](#)).

Water quality buffer means a setback from the top of water body's bank of undisturbed vegetation, including trees, shrubs and herbaceous vegetation; enhanced or restored vegetation; or the re-establishment of native vegetation bordering streams, ponds, wetlands, springs, reservoirs or lakes, which exists or is established to protect those water bodies. The goal of the water quality buffer is to preserve undisturbed vegetation that is native to the streamside habitat in the area of the project. Vegetated, preferably native, water quality buffers protect water bodies by providing structural integrity and canopy cover, as well as stormwater infiltration, filtration and evapotranspiration. Buffer width depends on the size of a drainage area.

Waters of the State or simply **Waters** is defined in the Tennessee Water Quality Control Act and means any and all water, public or private, on or beneath the surface of the ground, which are contained within, flow through or border upon Tennessee or any portion thereof except those bodies of water confined to and retained within the limits of private property in single ownership which do not combine to effect a junction with natural surface or underground waters.

Wet weather conveyance means, notwithstanding any other law or rule to the contrary, man-made or natural watercourses, including natural watercourses that have been modified by channelization:

- (A) That flow only in direct response to precipitation runoff in their immediate locality;
- (B) Whose channels are at all times above the groundwater table;
- (C) That are not suitable for drinking water supplies; and
- (D) In which hydrological and biological analyses indicate that, under normal weather conditions, due to naturally occurring ephemeral or low flow there is not sufficient water to support fish, or multiple populations of obligate lotic aquatic organisms whose life cycle includes an aquatic phase of at least two (2) months.

You and **Your** as used in this permit is intended to refer to the permittee, the operator, or the discharger as the context indicates and that party's responsibilities (e.g., the city, the county, the flood control district, the U.S. Air Force, etc.).

7. APPENDIX A – MS4 ANNUAL REPORT

*Tennessee Department of Environment and Conservation
Division of Water Resources
Enforcement and Compliance Section
William R. Snodgrass – Tennessee Tower
312 Rosa L. Parks Avenue, 11th Floor
Nashville, TN 37243-1102*

Municipal Separate Storm Sewer System (MS4) Annual Report

1. MS4 Information

Name of MS4

Name of Contact Person

Telephone (including area code)

Mailing Address

City

State

ZIP code

What is the current population of your MS4?

What is the reporting period for this annual report? From to

2. Protection of State or Federally Listed Species

A. Are any of the MS4 discharges or discharge-related activities likely to jeopardize state or federally listed species (see subpart 2.4)? ☐ Yes ☐ No

B. Please attach the determination of the effect of the MS4 discharges on state or federally listed species per subpart 2.4.

3. Water Quality Priorities

A. Does your MS4 discharge to waters listed as impaired on your state [303\(d\) list](#)? ☐ Yes ☐ No

B. If yes, identify each impaired water, the impairment(s), whether a TMDL has been approved by EPA for each, and whether the TMDL identifies your MS4 as a source of the impairment.

Impaired Water	Impairment	Approved TMDL		MS4 Assigned to WLA	
		<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No
		<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No
		<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No

C. What specific sources of these pollutants of concern are you targeting?

- D. Do you have discharges to any Exceptional TN Waters (ETWs) or Outstanding National Resource Waters (ONRWs)? ☐ Yes ☐ No
- E. Are you implementing additional specific provisions to support and improve the continued integrity of ETWs or ONRWs located within your jurisdiction? ☐ Yes ☐ No

4. Public Education and Public Participation

- A. Is your public education program targeting specific pollutants and sources of those pollutants? ☐ Yes ☐ No
- B. If yes, what are the specific causes, sources and/or pollutants addressed by your public education program?
- C. Note specific successful outcome(s) (NOT tasks, events, publications) fully or partially attributable to your public education program during this reporting period.
- D. Do you have an advisory committee or other body comprised of the public and other stakeholders that provides regular input on your stormwater program? ☐ Yes ☐ No
- E. Provide a summary of all public meetings required by the permit. _____

5. Codes and Ordinances Review and Update

- A. Is a completed copy of the EPA Water Quality Scorecard submitted with this report? ☐ Yes ☐ No
- B. Include status of implementation of code, ordinance and/or policy revisions associated with permanent stormwater management.

6. Construction

- A. Do you have an ordinance or adopted policies stipulating:
- Erosion and sediment control requirements? ☐ Yes ☐ No
 - Other construction waste control requirements? ☐ Yes ☐ No
 - Requirement to submit construction plans for review? ☐ Yes ☐ No
 - MS4 enforcement authority? ☐ Yes ☐ No
 - Have you developed written procedures for site plan review and approval? ☐ Yes ☐ No
 - Do the written procedures for site plan review and approval include an evaluation of plan completeness and overall BMP effectiveness? ☐ Yes ☐ No
 - Have you developed written procedures for managing public input on projects? ☐ Yes ☐ No
 - Have you developed written procedures for site inspection and enforcement? ☐ Yes ☐ No
 - Have all MS4 Inspectors maintained certification under the [Tennessee Fundamentals of Erosion Prevention and Sediment Control](#), Level 1? ☐ Yes ☐ No
 - Have all MS4 site plan reviewers maintained certification under the [Tennessee Fundamentals of Erosion Prevention and Sediment Control](#), Level 2? ☐ Yes ☐ No
- B. How many active construction sites disturbing at least one acre were there in your jurisdiction this reporting period?
- C. How many of these active sites did you inspect this reporting period? _____
- D. On average, how many times each, or with what frequency, were these sites inspected (e.g., weekly, monthly, etc.)?

E. Do you prioritize certain construction sites for more frequent inspections? ☐ Yes ☐ No

If Yes, based on what criteria? _____

7. Illicit Discharge Elimination

A. Have you completed a map of all known outfalls and receiving waters of your storm sewer system? ☐ Yes ☐ No

B. Have you completed a map of all known storm drain pipes of storm sewer system? ☐ Yes ☐ No

C. How many outfalls have you identified in your system? _____

D. How many of these outfalls have been screened for dry weather discharges? _____

E. How many of these have been screened more than once? _____

F. What is your frequency for screening outfalls for illicit discharges? _____

G. Do you have an ordinance that effectively prohibits illicit discharges? ☐ Yes ☐ No

H. During this reporting period, how many illicit discharges/illegal connections have you discovered (or been reported to you)? _____

I. Of those illicit discharges/illegal connections that have been discovered or reported, how many have been eliminated? _____

J. Do you have the authority to recover cost for addressing illicit discharges? ☐ Yes ☐ No

8. Stormwater Management for Municipal Operations

A. Have stormwater pollution prevention plans (or an equivalent plan) been developed for:

All municipal parks, ball fields and other recreational facilities ☐ Yes ☐ No

All municipal turf grass/landscape management activities ☐ Yes ☐ No

All municipal vehicle fueling, operation and maintenance activities ☐ Yes ☐ No

All municipal maintenance yards ☐ Yes ☐ No

All municipal waste handling and disposal areas ☐ Yes ☐ No

B. Are stormwater inspections conducted at these facilities? ☐ Yes ☐ No

If Yes, at what frequency are inspections conducted? _____

C. Have standard operating procedures or BMPs been developed for all MS4 field activities? (e.g., road repairs, catch basin cleaning, landscape management, etc.) ☐ Yes ☐ No

D. Do you have a prioritization system for storm sewer system and permanent BMP inspections? ☐ Yes ☐ No

E. On average, how frequently are catch basins and other inline treatment systems inspected? _____

F. On average, how frequently are catch basins and other inline treatment systems cleaned out/maintained? _____

G. Have all applicable municipal employees received training, as identified in each of the following permit sections:

3.2.3 - Illicit discharge detection and elimination ☐ Yes ☐ No

If Yes, identify the number of municipal employees trained _____.

3.2.4 - Construction site stormwater runoff control ☐ Yes ☐ No

If Yes, identify the number of municipal employees trained _____.

3.2.5 - Permanent stormwater management in new development and significant redevelopment ☐ Yes ☐ No

If Yes, identify the number of municipal employees trained _____.

3.2.6 - Pollution prevention/good housekeeping for municipal operations

☐ Yes

☐ No

If *Yes*, identify the number of municipal employees trained ____.

9. Permanent Stormwater Controls

A. Do you have an ordinance or other mechanism to require:

Site plan reviews of all new and re-development projects?

☐ Yes

☐ No

Maintenance of stormwater management controls?

☐ Yes

☐ No

Retrofitting of existing BMPs with green infrastructure BMPs?

☐ Yes

☐ No

B What is the threshold for new/significant redevelopment stormwater plan review? (e.g., all projects, projects disturbing greater than one acre, etc.)

C. Have you implemented and enforced performance standards for permanent stormwater controls?

☐ Yes

☐ No

7.1.1.1 D. Do these performance standards go beyond the requirements found in paragraph 3.2.5.2 Performance Standards

The MS4 must implement and enforce permanent stormwater controls that are comprised of runoff reduction and pollutant removal. The permittee must require that stormwater discharges from new development and redevelopment sites be managed such that post-development hydrology does not exceed the pre-development hydrology at the site, in accordance with the performance standards contained in this section. Runoff reduction is the preferred control practice as it can achieve both volume control and pollutant removal.

If runoff reduction and/or pollutant removal cannot be fully accomplished on-site per 3.2.5.2.1 and 3.2.5.2.2, then the MS4 may propose off-site mitigation and/or payment into a fund for public stormwater projects. The MS4 must develop and apply criteria for determining the circumstances under which these alternatives will be available. A determination that standards cannot be met on site may not be based solely on the difficulty or cost of implementing measures, but must include multiple criteria that would rule out an adequate combination of infiltration, evapotranspiration and reuse such as: lack of available area to create the necessary infiltrative capacity; a site use that is inconsistent with capture and reuse of stormwater; and/or physical conditions that preclude use of these practices.

Runoff Reduction (green infrastructure)

7.1.1.1.1 Site design standards for all new and significant redevelopment projects require, in combination or alone, management measures that are designed, built and maintained to infiltrate, evapotranspire, harvest and/or use, at a minimum, the first inch of every rainfall event preceded by 72 hours of no measurable precipitation. This first inch of rainfall must be 100% managed with no storm water runoff being discharged to surface waters. For all new and redevelopment on private property, the MS4 may opt to have controls installed on that private property, in the public right-of-way, or a combination of both.

The requirement to apply runoff reduction standards may be cancelled or mitigated by factors similar to the following:

Where a potential for introducing pollutants into the groundwater exists, unless pretreatment is provided;
Where pre-existing soil contamination is present in areas subject to contact with infiltrated runoff;
Presence of sinkholes or other features.

Pre-development infiltrative capacity of soils at the site must be taken into account in selection of runoff reduction management measures.

The MS4 may develop a program to allow for incentive standards for redeveloped sites. The MS4 may provide a 10% reduction in the volume of rainfall to be managed for any of the following types of development. Such credits are additive such that a maximum reduction of 50% of the standard in the paragraph above is possible for a project that meets all 5 criteria:

Redevelopment;

Brownfield redevelopment;

High density (>7 units per acre);

Vertical Density, (Floor to Area Ratio (FAR) of 2 or >18 units per acre); and

- Mixed use and Transit Oriented Development (within ½ mile of transit).
-
- Pollutant Removal
-
- For projects that cannot meet 100% of the runoff reduction requirement (after any applicable incentive standards are applied), the remainder of the stipulated amount of rainfall must be treated prior to discharge with a technology reasonably expected to remove 80% total suspended solids (TSS). The treatment technology must be designed, installed and maintained to continue to meet this performance standard.
-
- Off-site mitigation

- For projects that cannot meet 100% of the runoff reduction requirements, the MS4 may allow runoff reduction measures to be implemented at another location within the same USGS 12-digit hydrologic unit code (HUC) as the original project. Off-site mitigation must be a minimum of 1.5 times the

Flow volumes	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Peak discharge rates	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Discharge frequency	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Flow duration	<input type="checkbox"/> Yes	<input type="checkbox"/> No

E. Please provide the URL/reference where all permanent stormwater management standards can be found.

F. How many development and significant redevelopment project plans were reviewed for this reporting period?

G. How many development and significant redevelopment project plans were approved? _____

H. How many permanent stormwater management practices/facilities were inspected? _____

I. How many were found to have inadequate maintenance? _____

J. Of those, how many were notified and remedied within 30 days? (If window is different than 30 days, please specify) _____

K. How many enforcement actions were taken that address inadequate maintenance? _____

L. Do you use an electronic tool (e.g., GIS, database, spreadsheet) to track post-construction BMPs, inspections and maintenance? ☐ Yes ☐ No

M. Do all municipal departments and/or staff (as relevant) have access to this tracking system? ☐ Yes ☐ No

N. Has the MS4 developed a program to allow for incentive standards for redeveloped sites? ☐ Yes ☐ No

O. How many maintenance agreements has the MS4 approved during the reporting period?

10. Industrial and High Risk Runoff

A. Has the MS4 developed and implemented a program to monitor and control pollutants in runoff from the following types of industrial and high risk facilities and activities:

Municipal landfills	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Hazardous waste treatment, storage and disposal facilities	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Industries subject to reporting requirements pursuant to SARA Title III section 313	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Industrial facilities that the MS4 determines are contributing a substantial loading of pollutants to the municipal separate storm sewer system	<input type="checkbox"/> Yes	<input type="checkbox"/> No

B. Has the MS4 maintained a database of industrial and high risk facilities and activities in the City which includes the following types of industries:

Those listed in 10 (A) above	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Facilities covered by individual NPDES permits	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Facilities covered under the TMSP	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Facilities regulated by the pretreatment program; and	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Facilities defined as industries by the EPA stormwater application rule of November 16, 1990		

C. Has the MS4 updated the database of industrial and high risk facilities and activities at least yearly? ☐ Yes ☐ No

If yes, provide a listing of any additionally identified industrial and high risk facilities and activities which discharge stormwater into the MS4:

Facility/Activity

D. Has the MS4 developed and implemented procedures, including an inspector manual and checklist, for routine inspections of industrial and high risk facilities and activities? ☐ Yes ☐ No

E. Is the MS4 performing these inspections at such a rate that all required industries will be inspected at least once every three years? ☐ Yes ☐ No

F. Provide a listing of inspections performed during this reporting year:

Facility/Activity

11. Enforcement

A. Identify which of the following types of enforcement actions you used during the reporting period, indicate the number of actions, the minimum measure (e.g., construction, illicit discharge, permanent stormwater control) or note those for which you do not have authority:

Action	Construction	Permanent Stormwater Controls	Illicit Discharge	Authority?
Notice of violation	# _____	# _____	# _____	<input type="checkbox"/> Yes <input type="checkbox"/> No
Administrative Penalties	# _____	# _____	# _____	<input type="checkbox"/> Yes <input type="checkbox"/> No
Stop Work Orders	# _____	# _____	# _____	<input type="checkbox"/> Yes <input type="checkbox"/> No
Civil penalties	# _____	# _____	# _____	<input type="checkbox"/> Yes <input type="checkbox"/> No
Criminal actions	# _____	# _____	# _____	<input type="checkbox"/> Yes <input type="checkbox"/> No
Administrative orders	# _____	# _____	# _____	<input type="checkbox"/> Yes <input type="checkbox"/> No
Other	# _____	# _____	# _____	

B. Do you use an electronic tool (e.g., GIS, data base, spreadsheet) to track the locations, inspection results, and enforcement actions in your jurisdiction? ☐ Yes ☐ No

C. What are the 3 most common types of violations documented during this reporting period?

12. Program Resources

A. What was your annual expenditure to implement the requirements of your MS4 NPDES permit and SWMP this past fiscal year? _____

B. What is next fiscal year budget for implementing the requirements of your MS4 NPDES permit and SWMP?

C. Do you have an independent financing mechanism for your stormwater program? ☐ Yes ☐ No

D. If so, what is it/are they (e.g., stormwater fees), and what is the annual revenue derived from this mechanism?

Source: _____ Estimated Amount \$ _____

Source: _____ Estimated Amount \$ _____

E. How many full time employees does your municipality devote to the stormwater program (specifically for implementing the stormwater program vs. municipal employees with other primary responsibilities that dovetail with stormwater issues)? _____

F. Do you share program implementation responsibilities with any other entities? ☐ Yes ☐ No

Entity	Activity/Task/Responsibility	Your Oversight/Accountability Mechanism

13. Evaluating/Measuring Progress

A. What indicators do you use to evaluate the overall effectiveness of your Stormwater Management Program, how long have you been tracking them, and at what frequency? Note that these are not measurable goals for individual BMPs or tasks, but large-scale or long-term metrics for the overall program, such as in-stream macroinvertebrate community indices, measures of effective impervious cover in the watershed, indicators of in-stream hydrologic stability, etc?

Indicator	Began Tracking (year)	Frequency	Number of Locations
Example: E. coli	2003	Weekly April–September	20

B. Provide a summary of data (e.g., water quality information, performance data, modeling) collected in order to evaluate the performance of permanent stormwater controls installed throughout the system. This evaluation may include a comparison of current and past permanent stormwater control practices. _____

C. What environmental quality trends have you documented over the duration of your stormwater program? (If you have reports or summaries, you can either attach them electronically, or provide the URL to where they may be found on the Web.)

14. Stormwater Management Program Update

A. Describe any changes to the MS4 program, per Section 3.5 of the permit, during the reporting period including but not limited to:

Changes adding (but not subtracting or replacing) components, controls or other requirements. _____

Changes to replace an ineffective or unfeasible BMP. _____

Information (e.g., additional acreage, outfalls, BMPs) on program area expansion based on annexation or newly urbanized areas. _____

Changes to the program as required by the division. _____

15. Certification

This report must be signed by a ranking elected official or by a duly authorized representative of that person. See signatory requirements in subpart 5.7 of the permit.

“I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.”

Printed Name and Title

Signature

Date

8. **RATIONALE (FACT SHEET)**

1. **Permittee**

The City of Memphis
NPDES Permit No. TNS068276
Shelby County, Tennessee

Permit Writers: Paul Higgins

1.1. **Purpose and Background**

1.1.1. Purpose of this Rationale Sheet

This rationale sheet is intended to explain the basis for conditions of a proposed NPDES permit to authorize discharges of stormwater runoff from the City of Memphis municipal separate storm sewer. The definition for the municipal separate storm sewer is consistent with EPA rules found at 40 CFR 122.26(b) and is included in Part 6 of the permit.

1.1.2. EPA Stormwater Rules

Over the past 30 years, EPA and state water quality agencies have realized the great impact that rain water runoff has on surface waters - streams, rivers, lakes, estuary and ocean waters. Rain water falling on industries, urban areas and construction activities can become contaminated with sediments, suspended solids, nutrients (phosphorous and nitrogen), metals, pesticides, organic material and floating trash. These pollutants are then carried into the surface waters. Unlike sanitary wastewater and industrial wastewater, historically most stormwater has not been treated prior to entering streams. Pollution from stormwater must be prevented at the source by reducing the volume and intensity of the runoff and/or the reduction of pollutants in the runoff.

Federal, state and local governments have passed laws and regulations to address the problem of polluted runoff. Phase I EPA stormwater regulations initiated a national stormwater permitting program in 1990 that applied to industrial activities, to construction sites of five acres or more and to urban runoff from larger cities. Phase II regulations in 1999 address additional urbanized areas, certain cities with population over 10,000, and construction activities of one to five acres.

The Tennessee Department of Environment and Conservation, Division of Water Resources implements the EPA Phase I and Phase II programs in Tennessee.

1.2. **MS4 Description**

1.2.1. Discharger

The City of Memphis
Division of Public Works
125 N. Main Street
Memphis, TN 38103
Contact: Ms. Tasha King-Davis, P.E.
Stormwater Program Manager
(901) 636-4345

1.2.2. Permit Status

The current permit was issued June 30, 2003, and expired on June 30, 2008, and administratively continued to the present time.

1.2.3. The Permittee's System

The City of Memphis encompasses an area of approximately 340 square miles in Shelby County in the southwest corner of Tennessee. Stormwater drainage in the city and the county is directed to the Mississippi River by way of three major watersheds; the Nonconnah Creek, the Wolf River, and the Loosahatchie River. The City of Memphis, Division of Public Works is responsible for operating and maintaining the MS4, along with assistance from other branches of city government agencies.

The permittee maintains a website at <http://stormwatermatters.com/Home/Default.aspx>. There is a link to the City of Memphis/Shelby County *Storm Water Manual*, which provides a comprehensive and informative reference for the regulated stormwater community. The manual is divided into three sections; Policy, [Drainage](#), and Interim Guidance on Best Management Practices.

1.2.4. Description of Discharges

Stormwater runoff from the MS4 includes runoff from construction sites, roads, municipal operations such as garages, schools, storage facilities, golf courses, etc.; and residential, commercial and industrial properties.

It is important to realize that non-stormwater can be introduced into the storm sewer system. For example, illicit discharges of industrial process-related wastewater; dumping of wash water from business operations; car wash water from homes or special car wash events; parking lot wash water; spills and leaks from equipment, vehicles and storage tanks; potable water from water lines and fire hydrants. These are some common sources of contamination in storm sewers. The proposed permit does not authorize the discharge of non-stormwater by the MS4 into streams except for those that are determined not to be substantial contributors of pollutants. Section [1.5.2](#) of the permit lists the allowable non-stormwater discharges.

1.2.5. Permit Requirements

The Water Quality Control Act of 1987 (the Clean Water Act, or the "CWA"), 33 U.S.C. §1342, et. seq., which set up the present NPDES permit requirements for discharges of urban runoff, requires that the proposed NPDES permit issued to the City of Memphis:

- include a requirement to effectively prohibit non-stormwater discharges into the storm sewers; and,
- reduce pollutants in discharges from the MS4 to the "Maximum Extent Practicable" (MEP).

As did the previous permit, this reissued permit will fulfill these requirements primarily by requiring the permittee to implement a number of programs and tasks, Best Management Practices (**BMPs**), to prevent stormwater pollution at the source, through a comprehensive Stormwater Management Program (SWMP).

The framework and concepts in this permit are drawn from the EPA publication, [MS4 Permit Improvement Guide, EPA 833-R-10-001](#). That framework and concept was then applied to Tennessee MS4s and even more specifically to the City of Memphis MS4 to derive specific permit requirements. However, the division has established certain permit criteria that are uniform across the state. Take for instance the applicability criteria for the control of construction stormwater and the establishment of permanent stormwater controls on development and significant redevelopment projects (1 acre+...). Some municipalities across the state are using an acreage lower than the state's to implement the MS4 program. When establishing statewide requirements, the division made every effort to take into account

statewide climate, geography, topography and economic conditions. For instance, the permanent stormwater performance standards were established with a multi-tiered system to accommodate, not only the differences from site to site within the MS4, but the broader differences found across the state.

1.2.6. Jurisdiction and Permit Requirement Responsibilities

The MS4's jurisdiction extends to the incorporated boundaries of the City of Memphis, and the MS4 is responsible for various types of permit requirements within those boundaries. Many MS4 requirements, such as the establishment of statutes or the enforcement of construction codes, do not directly impact the discharge of stormwater to waters of the state (discharges through the sewer system). These types of requirements have more immediate impacts on construction sites or other areas that may not currently have storm sewer service. However the requirements are still applicable to the MS4. There are other requirements, such as the sampling of wet weather discharges and screening outfalls for illicit discharges that directly impact stormwater discharges, through the storm sewer system to waters of the state. These types of permit requirements would apply only to areas with existing storm sewers and be used in monitoring other activities to control these direct discharges. The ultimate purpose of including both types of permit requirements, whether or not they have a direct affect on stormwater discharges, is to improve the quality of stormwater runoff within the jurisdiction of the MS4. It is the division's belief that requirements that both directly and indirectly control the quantity of stormwater and the pollutants in stormwater constitute the best overall approach for improving stormwater quality within MS4s.

There is a third type of activity mentioned in the permit, a potentially harmful stormwater discharge to waters of the state that was not discharged from the MS4's sewers and possibly outside the MS4's jurisdiction, but was observed by the MS4. This type of discharge might include non-permitted industrial stormwater runoff that runs directly to a stream or an illicit discharge from outside the jurisdictional boundaries of the MS4. In cases such as these, the permit requires that the MS4 communicate the problem to the division so that suitable action may be taken.

The bottom line describing the overall responsibilities included in this permit is that the division is seeking an active, responsible partner with the goal of improving stormwater quality and improving the viability of the waters of the state that impact the Memphis area.

1.3. Receiving Waters

The receiving streams under consideration in this permit are any waters of the state to which the MS4 discharges. The definition of waters of the state is found in the Tennessee Water Quality Control Act and is included in Part 6 of the permit. As stated above, stormwater runoff in the MS4 drains, either directly or via storm sewers and/or tributaries, to the Mississippi River. There are three major watersheds leading to the Mississippi (HUC 08010100) in Shelby County; the Nonconnah Creek (HUC 08010211), the Wolf River (HUC 08010210), and the Loosahatchie River (HUC 08010209).

1.3.1. Impaired Waterbodies

The division's 2010 *303(d) List*, as well as the latest assessment information, indicates that several surface waters in all three of the major watersheds in the MS4's jurisdiction are impaired or otherwise assessed as needing additional controls for specific pollutants associated with MS4 discharges. The complete list of impacted waterbodies and the pollutants of concern may be viewed on the division's webpage at:

http://www.tn.gov/environment/water/water-quality_publications.shtml.

1.4. Special Conditions

1.4.1. Protection of State or Federally Listed Species

MS4s cast a very broad foot-print within which a large variety of activities are conducted. These activities range from the normal everyday activities associated with people living, working and enjoying leisure time to all those functions necessary in providing for those basic functions such as building and maintaining transportation and utility systems;

Page R- 3 of 15

the construction of housing, recreation, workplace, and other facilities; and the handling of residential, commercial, and industrial wastes. Because of this broader range of activities, the potential for a wide variety of stormwater pollutants as well as the possibility of increased sources and volumes of stormwater runoff are possible from these jurisdictions. Because of this diversity, MS4s must consider the effects of their stormwater discharges on federally and/or state listed aquatic species and/or federally designated critical habitat.

The division has developed a system whereby the MS4, in partnership with United States Fish and Wildlife Service (USFWS) and the Tennessee Wildlife Resources Agency (TWRA), may assure that discharges from the MS4 are protective of these sensitive species and habitats. The system consists of four basic concepts; identification, communication, follow-up and annual review. This system is simplified over the previous process and has been approved by management of USFWS and TWRA. The basic steps are:

- Identify the species/habitats, receiving streams and all outfalls into the receiving streams within the MS4.
- Report the information above, including a copy of the construction and permanent stormwater ordinances (or other control mechanisms), and the last MS4 Annual Report (with supporting information) to USFWS and TWRA.
- Follow-up on any feed-back offered by the wildlife agencies. Additionally, the knowledge gained in this process should be used by the MS4 in the various planning processes throughout the program.
- Review the information in the first step for changes annually, and repeat the next two steps if changes are found. It is only necessary to provide the changes to the agencies, not the entire initial report with changes.

1.4.2. Co-permittees and Coordinated Programs

The City of Memphis MS4 does not currently have any co-permittee or coordinated program agreements with adjacent or inclusive MS4s and will not develop any such agreements within the term of this permit.

1.4.3. Discharges to Water Quality Impaired Waters

In general, discharges from the MS4 cannot cause measurable degradation of state waters that are listed on the *303(d) List* as being impaired for a pollutant of concern (1200-04-03-.06). For discharges into impaired segments, there are two scenarios – where a **TMDL (Total Maximum Daily Load)** is developed and a TMDL is not developed. Where a TMDL is developed, MS4s are required to demonstrate compliance with waste load allocation(s) as defined in the implementation part of the TMDL. Where a TMDL is not developed, the MS4s stormwater management plan (SWMP) must include a monitoring component that assesses the effectiveness of BMPs in controlling the pollutants of concern.

The City of Memphis has commented that their MS4 is not responsible for any TMDL that is approved after the effective date of the final permit. It is important to note that TMDLs are developed using data and calculations as a basis for permit conditions on a watershed that is impaired for a common pollutant or pollutants. They are developed so that all the permits across the watershed address the impairment in a uniform and effective manner. TMDLs are not statutory or regulatory in nature as indicated in 40 CFR Part 122.43 (Memphis' comment), but they are the basis for establishing permit conditions and limitations as indicated in 40 CFR Part 122.44. Additionally, each TMDL is subject to the division's public notice procedures. In the case of the MS4 permits, MS4 permittees are only held responsible for TMDLs that cover the MS4 pollutants of concern. Since these pollutants are already covered in the permit, and the permit contains specific requirements for the impaired streams contained in the TMDL, the net effect is relatively slight when the TMDL actually goes into effect. Furthermore, the division believes the current method of including language in permits referencing future TMDLs is much more cost effective than revoking and reissuing all the permits in a watershed each time a TMDL is issued.

Compliance with a TMDL requires that a permittee meet the requirements in the TMDLs Implementation Plan. Basically for MS4s, this section commonly states that the MS4 must simply follow their permit. The permit's approach to controlling discharges to water quality impaired receiving streams is similar whether the stream is currently covered by an approved TMDL or is a stream that is simply listed as impaired on the current *303 (d) List*.

The MS4 is required to design BMPs specific to the pollutant and the impairment and then monitor to evaluate the effectiveness of the designed plan. For streams with approved TMDLs, the BMPs must take the Waste Load Allocation of the particular pollutant into account during all phases from planning and design through compliance monitoring. Compliance monitoring may take many forms such as outfall monitoring, in-stream monitoring and/or modeling. The permit defines monitoring plans more specifically for both TMDL and impaired *303(d) Listed* streams. In short, more formal documentation is required from design through compliance monitoring for TMDL affected discharges than for discharges to *303(d) Listed* streams.

Visual Stream Surveys and Impairment Inventories must be performed on streams impaired for siltation, habitat alteration and pathogens in order to identify and prioritize MS4 stream impairment sources. These monitoring techniques are effective, inexpensive and widely used in evaluating overall stream health as well as identifying specific impairment sources. There are multiple sources of developed surveys available in the permit.

The division maintains a list of EPA-approved TMDLs on its webpage at:

<http://www.tn.gov/environment/water/watersheds/>, grouped by watershed. The Nonconnah Creek watershed is a Group 1 watershed, the Loosahatchie River watershed is a Group 2 watershed, and the Wolf River watershed is a Group 3 watershed.

1.5. Stormwater Management Program

The MS4 must develop, implement, and enforce a Stormwater Management Program (SWMP) designed to reduce the discharge of pollutants from the MS4 to protect water quality, and to satisfy the appropriate water quality requirements of the Clean Water Act. The six minimum measures, as written by the EPA in the Phase I final rule (December, 1999, 40 CFR 122.3), serve as basis for NPDES permit conditions. These will form the backbone of the proposed permit requirements, as follows:

- Public Education and Outreach
- Public Participation/Involvement
- Illicit Discharge Detection and Elimination
- Construction Site Runoff Control
- Post-Construction Runoff Control
- Pollution Prevention/Good Housekeeping

1.5.1. Public Education and Outreach

The MS4 may use stormwater educational materials provided by the state, EPA, environmental, public interest or trade organizations, or other MS4s. The public education program should inform individuals and households about the steps they can take to reduce stormwater pollution, such as ensuring proper septic system maintenance, ensuring the proper use and disposal of landscape and garden chemicals including fertilizers and pesticides, protecting and restoring riparian vegetation, and properly disposing of used motor oil or household hazardous wastes. The program should inform individuals and groups how to become involved in local stream and beach restoration activities as well as activities that are coordinated by youth service and conservation corps or other citizen groups. The public education program should be tailored, using a mix of locally appropriate strategies, to target specific audiences and communities. Examples of strategies include distributing brochures or fact sheets, sponsoring speaking engagements before community groups, providing public service announcements, implementing educational programs targeted at school age children, and conducting community-based projects such as storm drain stenciling, and watershed and beach cleanups. In addition, some of the materials or outreach programs should be directed toward targeted groups of commercial, industrial, and institutional entities likely to have significant stormwater impacts. One example would be, providing information to restaurants on the impact of grease clogging storm drains and to garages on the impact of oil discharges. The MS4 is encouraged to tailor the outreach program to address the viewpoints and concerns of all communities, particularly minority and disadvantaged communities, as well as any special concerns relating to children.

1.5.2. Public Participation/Involvement

40 CFR Part 122.26(d)(2)(iv) states that the, "...management program covers the duration of the permit. It shall include a comprehensive planning process which involves public participation." The public should be included in developing, implementing, and reviewing the stormwater management program. The public participation process should make efforts to reach out and engage all economic and ethnic groups. Opportunities for members of the public to participate in program development and implementation might include simple opportunities to comment on specific problems such as complaint programs and also include more challenging opportunities like serving as citizen representatives on a local stormwater management panel, attending public hearings, working as citizen volunteers to educate other individuals about the program, assisting in program coordination with other pre-existing programs, or participating in volunteer monitoring efforts.

1.5.3. Illicit Discharge Detection and Elimination

The plan to detect and address illicit discharges should include the following four components: procedures for locating priority areas likely to have illicit discharges; procedures for tracing the source of an illicit discharge; procedures for removing the source of the discharge; and procedures for program evaluation and assessment. The MS4 must screen all outfalls during dry weather and conduct field tests of selected pollutants as part of the procedures for locating priority areas (see schedule in section 3.3.7 above). Screening procedures may include multiple methods such as aerial infrared scanning, photographic monitoring, as well as visual monitoring. The program must, however, include a plan to systematically and statistically sample all major outfalls over the permit cycle. Illicit discharge education actions may include storm drain stenciling, a program to promote, publicize, and facilitate public reporting of illicit connections or discharges, and distribution of outreach materials.

In order to trace the origin of a suspected illicit discharge or connection, the permittee must have an up-to-date map of its storm drain system. This is critical in order to isolate the potential source of the non-stormwater discharges and the areas of potential impact. Ideally, the information would be available as a geographic information system (GIS) layer in a geo-locational database, however, paper maps are sufficient providing they have the necessary reference information.

The permit primarily requires the mapping of outfalls, drainage areas contributing to those outfalls, and receiving waters. The municipal facility inventory created to comply with the pollution prevention/good housekeeping requirements must also be included either on this sewer system map or on a separate MS4 map.

The permit requires the permittee to train field staff, who may come into contact or observe illicit discharges, on the identification and proper procedures for reporting illicit discharges. Field staff to be trained may include, but are not limited to, municipal maintenance staff, inspectors, and other staff whose job responsibilities regularly take them out of the office and into areas within the MS4 area. Permittee field staff are out in the community every day and are in the best position to locate and report spills, illicit discharges, and potentially polluting activities. With proper training and information on reporting illicit discharges easily accessible, these field staff can greatly expand the reach of the illicit discharge detection and elimination program.

1.5.4. Construction Site Runoff Control

Examples of sanctions to ensure compliance include non-monetary penalties, fines, bonding requirements and/or permit denials for non-compliance. Procedures for site plan review should include the review of individual pre-construction site plans to ensure consistency with local sediment and erosion control requirements. Procedures for site inspections and enforcement of control measures could include steps to identify priority sites for inspection and enforcement based on the nature of the construction activity, topography, and the characteristics of soils and receiving water quality. The MS4 should provide appropriate educational and training measures for construction site operators. The MS4 may wish to require a stormwater pollution prevention plan for construction sites within your jurisdiction that discharge into your system. See Sec. 122.44(s) (NPDES permitting authorities' option to incorporate qualifying State, Tribal and local erosion and sediment control programs into NPDES permits for stormwater discharges from

construction sites). Also see Sec. 122.35(b) (The NPDES permitting authority may recognize that another government entity, including the permitting authority, may be responsible for implementing one or more of the minimum measures on your behalf.)

The permit requires the permittee to provide appropriate outreach materials to construction site operators. Education of construction site operators regarding stormwater management and regulatory requirements is an essential part of controlling stormwater discharges from construction sites. Making brochures, guidance documents and other training techniques and materials available will increase the knowledge of operators and compliance in the field and can help them choose the correct structural control and processes, correctly install the controls, and successfully implement control measures. These materials can be made available during the normal course of business (i.e. in BMP manuals, in plan notes, during meetings) or via brochures or websites. In addition, the permittee must either provide training or notify the operators of available training opportunities.

Public involvement requirements include the development of a hotline or other telephone number for the public to call regarding stormwater concerns at construction sites.

1.5.5. Permanent Stormwater Management in New Development and Significant redevelopment

Land development directly affects watershed functions, and water quality in receiving waters. When development occurs in previously undeveloped areas, the resulting alterations to the land can dramatically change how water is transported and stored. Development creates impervious surfaces and compacted soils that increases surface runoff and decreases ground water infiltration. These changes can increase the volume and velocity of runoff, the frequency and severity of flooding, peak storm flows as well as the type, concentration, and quantity of pollutants in discharges.

As urbanization occurs, a corresponding increase in impervious surface area also occurs. These changes to the landscape cause the volumes, rates and durations of runoff-related discharges to increase, along with a corresponding increase in pollutant loadings. In addition, stream channels are destabilized due to the increased energy of the runoff that results in bank cutting, stream channel widening, channel incision and detrimental sediment mobilization and deposition. Because of these changes in runoff volumes and rates, the stream systems and waterbodies within and downstream of urbanization are commonly impaired due to sediment and nutrient loadings, increased total suspended solids, poor biotic communities, and increased stream temperatures.

Stormwater management standards have been historically written with provisions that promote or require extended detention controls, such as extended detention wet ponds, dry detention basins or constructed wetlands. There are multiple problems with extended detention as a water quality management practice. Primary to this is that receiving stream dynamics are based on balances of much more than just discharge rates. Extended detention practices are first and foremost designed to prevent downstream flooding and not to protect downstream channel stability and water quality. Water quality protection has been a secondary goal, or one omitted entirely during the design of these facilities. Over time it has become apparent through research and monitoring that these practices do not effectively protect the physical, chemical or biological integrity of our receiving waters. Furthermore, operation and maintenance of these systems to ensure they perform as designed requires a level of managerial and financial commitment that is often not provided.

There is now a large body of research demonstrating that practices that mimic the natural water cycle – processes that result in the infiltration, evapotranspiration and capture and use of stormwater – are simultaneously advantageous for protecting the physical, chemical and biological characteristics of receiving waters. These practices are designed to mimic the way natural vegetated landscapes respond to precipitation events. When it rains or when snow melts, vegetated areas (forests, prairies and grasslands, gardens and trees) intercept, evaporate and absorb much of the rainfall. Some of the precipitation is also absorbed or infiltrated into the soil. Ideally, site designs and plans should make use of these natural systems and processes as much as possible to mimic or preserve the site hydrology, i.e., the balance of plant uptake of water, infiltration of runoff into the soil and groundwater table, and the natural runoff patterns into natural drainage ways and streams.

This permit encourages infiltration, evapotranspiration and capture and use of stormwater by prescribing an iterative set of performance standards. These standards are listed below in the priority order:

- Runoff Reduction (infiltration or green infrastructure)
- Pollutant Removal
- Off-site Mitigation or
- Payment into Public Stormwater Project Fund.

The division determined that infiltrating the first inch of rainfall would be most protective of water quality with respect to the loading of pollutants. This approach most closely mimics the pre-development hydrologic conditions. The division understands that the standard of 100% infiltration of the first inch of rainfall may be more challenging on some sites and in some areas of the state. Therefore, the division established an alternative to the primary standard that is based on different control technologies. Pollutant removal would be used at those sites which can manage less than 100% runoff reduction. Though these two options are the preferred standards, the division recognizes that MS4s may need to allow other options, such as off-site mitigation or payment into a public stormwater project fund. The division set a 1:1.5 ratio for mitigation and/or payment upon recommendation from EPA.

The division established the multiple tiered approach to permanent stormwater controls for jurisdictions like the City of Memphis, which has areas with deposits of loess soils that can cause reduced infiltration capacity. Additionally, there are certain areas of the city where infiltration may not be desirable because of the effect on the aquifer that is used for drinking water. Using the tiered approach, a particular site may use pollutant removal in any combination with infiltration to meet permit requirements. If the combination of infiltration and removal are not a viable option, the MS4 can always move to either off-site mitigation and/or payment into the Public Stormwater Project Fund.

Imperviousness has been shown to correlate with water quality impacts. In order to minimize water quality impacts, the permittee must examine their planning principles to manage the creation of impervious surfaces at the watershed level, such as reducing the footprint of streets and parking lots. Also, ecologically sensitive areas can protect water quality by acting both as filters that reduce pollutants in stormwater discharges and as sponges to reduce the impact on the ecosystem's hydrology. Thermal pollution is also a concern that can impact biota in waterways. Stormwater discharges from impervious surfaces are often characterized by higher temperatures than natural, pervious surfaces. Reducing the chances of further increasing this temperature by preserving, protecting, and restoring natural features that provide shading for the waterway can further help reduce thermal pollution. Whenever possible, natural waterways must be protected and not disturbed by stormwater from developed sites. For example, areas that have a high potential for erosion must be avoided for development when possible. Protecting vegetation, native soils, and conserving water can also help ensure the hydrologic qualities of the site remain intact.

In addition, this permit requires implementation of Permanent Stormwater Controls. The permittee is required to develop policies and procedures to protect receiving waters from the impacts of stormwater runoff from new and significant redevelopment associated with both site scale decisions and designs, as well as with neighborhood, community and watershed scale decisions and designs.

Consideration of stormwater impacts from development is critical during the planning phases of development. This not only includes planning on the site-level, but also with respect to discharges from the MS4 on the watershed level. To the extent possible, stormwater management must be an integral part of higher level planning documents that determine where and how development that will result in stormwater discharges to the MS4 should occur since these decisions affect water quality. Using land efficiently can result in better stormwater management by putting development where it is most appropriate. For example, by directing and concentrating new development in areas targeted for growth, communities can reduce or remove development pressure on undeveloped parcels and protect sensitive natural lands and recharge areas. Another strategy is redeveloping already degraded sites such as abandoned shopping centers or underutilized parking lots. In this case, the net increase in discharges from developed sites would likely be zero, and it would likely decrease, depending on the on-site infiltration practices used. Also, by allowing or encouraging denser development, less land is converted overall, and less total impervious area created.

1.5.6. Codes and Ordinances Review and Update

The EPA Water Quality Scorecard (the scorecard) is a tool that focuses on common municipal codes and ordinances provisions that can impact the effect of stormwater runoff on receiving waters. These impacts may be inadvertent; in attempts to address unrelated municipal issues, codes and ordinances frequently drive the creation of additional impervious surfaces such as large parking lots, wide roads, curbed streets, etc. The scorecard addresses a variety of issues, and provides a quantitative scale that the MS4 will use to score its policies with respect to protection of receiving waters. The purpose of the evaluation is two-fold:

- to help the permittee identify policies that may be creating obstacles to comprehensive and effective stormwater management, and
- to identify preferred alternatives.

The MS4 is expected to make improvements to municipal policies currently creating barriers to protection of waters of the state. However, the division's intent is not for the MS4 to ultimately achieve a 'perfect score'. The score will not be used to measure compliance with the permit; rather, for the MS4 to identify high priority areas for the community, and focus effort on those particular issues. A completed copy of the scorecard shall be submitted with the subsequent annual report.

1.5.7. Project Plan Review, Approval and Enforcement

The MS4 is required to have an ordinance or other regulatory mechanism to ensure permanent stormwater management. The division believes that this can be best accomplished by establishing procedures for project review and approval that include an enforcement component.

1.5.8. BMP Maintenance

To further ensure permanent stormwater management, the division is requiring that the MS4 establish maintenance agreements with owners and/or operators at sites that are subject to performance standards. All stormwater BMPs must be maintained in perpetuity.

1.5.9. Inventory and Tracking of Management Practices

In order to make sure that BMPs are properly implemented and maintained, the division is requiring that MS4s develop a tracking system for these BMPs. The permit requires for data to be stored in electronic format so it can be readily shared with other agencies and the public.

1.5.10. Owner/Operator Inspections

In order to make sure that BMPs are properly implemented and maintained, routine and comprehensive inspections are required. Routine inspections are to be performed on an annual basis, with a purpose of confirming that BMPs are properly functioning. Comprehensive inspections should evaluate all aspects of BMP design, implementation, maintenance and effectiveness.

1.5.11. Pollution Prevention/Good Housekeeping for Municipal Operations

The Pollution Prevention/Good Housekeeping for municipal operations minimum control measure is a key element of any MS4 stormwater management program. This measure requires the MS4 operator to examine and subsequently alter their own actions to help ensure a reduction in the amount and type of pollution that: (1) collects on streets, parking lots, open spaces, and storage and vehicle maintenance areas and is discharged into local waterways; and (2) results from actions such as environmentally damaging land development and flood management practices or poor maintenance of storm sewer systems.

While this measure is meant primarily to improve or protect receiving water quality by altering municipal or facility operations, it also can result in a cost savings for the small MS4 operator, since proper and timely maintenance of storm sewer systems can help avoid repair costs from damage caused by age and neglect.

1.5.11.1 Storm Sewer System Maintenance Activities

MS4 Maintenance

Traditional municipal storm drain systems were designed to quickly collect and convey runoff to receiving waters. The purpose of catch basin, inlet, and storm drain cleanouts is to prevent blockages, flooding, and reduce pollution.

Fine particles and pollutants from run-on, atmospheric deposition, vehicle emissions, breakup of street surface materials, littering, and sanding can accumulate along the curbs of roads in between rainfall events. This results in the accumulation of pollutants such as sediment, nutrients, metals, hydrocarbons, bacteria, pesticides, trash and other toxic chemicals. Storm drain maintenance is often the last opportunity to remove pollutants before they enter the storm drain system. Because they effectively trap solids, they need to be cleaned out periodically to prevent those materials from being transported by high stormwater flows. By doing so the MS4 will prevent trash and litter from ultimately becoming sources of marine debris, which is any man-made, solid material that enters waterways either directly or indirectly.

The permit includes a priority ranking approach for catch basins so that municipal resources are directed to the areas and structures that generate the most pollutants. A priority ranking system is required because some catch basins will accumulate pollutants faster than others based on the nature of the drainage area and whether controls are present upstream of the catch basin. Catch basins with the highest accumulations will need to be cleaned more often than those with low accumulations. The permit language also includes a requirement that triggers catch basin cleaning when a catch basin is one-third full.

Proper storm drain system cleanout includes vacuuming or manually removing debris from catch basins; vacuuming or flushing pipes to increase capacity and remove clogs; removing sediment, debris, and overgrown vegetation from open channels; and repairing structures to ensure the integrity of the drainage system. It is important to conduct regular inspections of all storm sewer infrastructures and perform maintenance as necessary. Though these activities are intended to ensure that the sewer system is properly maintained and that any accumulated pollutants are removed prior to discharge, if not properly executed, cleanout activities can result in pollutant discharges. In selecting maintenance practices, the permittee must carefully evaluate each with an eye towards stormwater pollution potential to minimize unintended pollutant discharges, such as the use of flushing storm drain pipes to remove debris without recapturing the debris further down the pipe.

The materials removed from catch basins may not reenter the MS4. The material must be dewatered in a contained area and the water treated with an appropriate and approved control measure or discharged to the sanitary sewer. The solid material will need to be stored and disposed of properly to avoid discharge during a storm event. Some materials removed from storm drains and open channels may require special handling and disposal, and may not be authorized to be disposed of in a landfill.

Street Sweeping and Cleaning

Street and parking lot sweeping is a practice that most municipalities initially conducted for aesthetic purposes. However, the water quality benefits are now widely recognized. Street sweeping also prevents particulate matter associated with road dust from accumulating on public streets and washing into storm drains.

The permit language addresses a number of important factors that impact the effectiveness of a street sweeping program. The first factor is the type of equipment used; the permit language stipulates that when equipment needs to be replaced, high-performance sweepers are purchased preferentially. Street sweeping has traditionally been more effective at removing large-sized particles, but new equipment has been developed to remove smaller, fine-grained

particles. Mechanical sweepers (broom-type) are usually the least expensive and are better suited to pick up large-grained sediment. Vacuum and regenerative air sweepers are better at removing fine-grained sediment particles, but they are more expensive. Removal efficiency can be improved through tandem sweeping (i.e., two sweepers sweeping the same route, with one following the other to pick up missed material), or if the street sweeper makes multiple passes on a street.

The second factor influencing street sweeping effectiveness is the way in which the equipment is operated; the permit specifies that equipment be operated according to the manufacturers' operating instructions by operators who have been trained to sweep in accordance with the Permit Requirements in order to protect water quality.

The third determining factor is the degree to which parked cars block sweeper access to the curb; one of the best ways to ensure access to the curb is to establish parking restrictions based on sweeping schedules and to inform residents of the schedule so they can voluntarily move their cars. The permit requires that the permittee institute parking restrictions and/or a public outreach campaign requesting that cars be parked elsewhere to accommodate sweeping schedules.

Because not all streets are suitable for sweeping (e.g., those that don't have a curb and gutter), source controls can be used in place of sweeping in those areas.

The permittee is required to maintain documentation of sweeping events and characterize the quantity and composition of pollutants removed from roadways. Street sweeping data are relatively easy to track and maintain, so the permit includes requirements for reporting and assessment of the effectiveness of the sweeping activities based on equipment used, miles swept, and the amount of materials collected.

The street sweeping material may not reenter the MS4. The material must be dewatered in a contained area and the water treated with an appropriate and approved control measure or discharged to the sanitary sewer. The solid material will need to be stored and disposed of properly to avoid discharge during a storm event. Some materials may require special handling and disposal, and may not be authorized to be disposed of in a landfill.

Flood Management

This permit requires that existing flood management projects be prioritized and a set number be evaluated to identify opportunities for water quality retrofits. This is because the focus of stormwater management in the past had been to control flooding and mitigate property damage, with less emphasis on water quality protection. These structures may handle a significant amount of stormwater and therefore offer an opportunity to modify their design to include water quality features for less than the cost of building new controls. This requirement applies not only to new flood control projects, but also to existing structures.

Pesticide, Herbicide, and Fertilizer Application and Management

The permit focuses on requiring source controls to reduce the amount of chemicals used. The permit specifies the use of integrated pest management, selection of native vegetation that is naturally adapted to local conditions and therefore requires fewer chemical and water inputs, reducing exposure of the chemicals to water by scheduling application according to weather forecasts and plant needs, and ensuring that municipal employees who are responsible for storing and handling these materials are educated about their use, disposal, and possible impacts.

Contractor Requirements and Oversight

Many municipalities use third-party contractors to conduct municipal maintenance activities in lieu of using municipal employees. Contractors performing activities that can affect stormwater quality must be held to the same standards as the permittee. Not only must these expectations be defined in contracts between the permittee and its contractors, but the permittee is responsible for ensuring, through contractually-required documentation or periodic site visits, that contractors are using stormwater controls and following standard operating procedures.

1.6. Industrial Stormwater Monitoring and Control

According to 40 CFR Part 122.26(d)(2)(i)(A), MS4s must, “Control through ordinance, permit, contract, order or similar means, the contribution of pollutants to the municipal storm sewers by stormwater discharges associated with industrial activity...” Additional, specific requirements are included in 40 CFR Part 122.26(d)(2)(iv)(C). There are two sections of the permit that deal with monitoring and controlling industrial stormwater runoff. Section 3.2.6.7 deals with runoff from potentially high risk industrial and commercial facilities that handle materials such as hazardous wastes and SARA section 313 chemicals. The second section is 3.3.8 is a limited monitoring program (one sampling event per year) on a selected permitted industry. This program gives both the MS4 and the division data that provides a good crosscheck to existing monitoring and inspection programs.

1.7. Qualifying Tribe, State or Local Program (QLP)

Under CFR 122.44(s), the division can formally recognize an MS4 as a Qualified Local Program (QLP) that has been shown to meet or exceed the provisions of the construction general permit. The division is providing a QLP program that provides clear criteria, incentives and formal recognition under the Tennessee Construction Stormwater Excellence Initiative.

The goal is to encourage the permittee to utilize the qualifying provision through the development of criteria, incentives and a formal “excellence” recognition and awards program

Though the option is not available in this permit at the request of the permittee, QLPs will provide for a more efficient process for managing construction stormwater by eliminating duplication of the effort between the MS4 and the division; ease the burden on construction site operators by providing them with one set of requirements to follow, not two; and stronger MS4 erosion prevention and sediment control programs.

1.7. Antidegradation Review

The antidegradation policy in Tennessee Rules, Chapter 1200-4-3-.06 requires that degradation of existing water quality be prevented unless necessary for economic and social benefit. The division believes that existing water quality will not be degraded by the issuance of this permit. The stormwater discharges authorized by this permit have been on-going since the federal regulations requiring an NPDES permit were adopted. The division believes that this permit will reduce the current level of pollution discharged from the MS4. The division also expects the pollution reduction measures implemented by the permittee to offset any expansion of stormwater conveyances systems and outfalls because of the permit requirement to implement a broad range of pollution reduction measures, including measures to address impacts from new development and significant redevelopment. Through an adaptive management process, the permittees are required to regularly review and refine their best management practices to reduce pollutants to the maximum extent practicable. The goal of the permit is a net reduction in pollutant loadings over the five-year permit term. Over the five-year permit term, a range of programs will be implemented and enhanced to minimize stormwater pollution discharges from existing and new residential, commercial, and industrial developments. Therefore, the issuance of this permit will protect and improve existing water quality and is consistent with the division’s antidegradation policy.

1.8. Reviewing and Updating Stormwater Management Programs

The SWMP is a set of structural and nonstructural actions and activities used by the permittee to reduce the discharge of pollutants to the maximum extent practicable. Minor changes and adjustments to the various SWMP elements are expected and may be necessary to more successfully adhere to the goals and requirements of the permit. One of the purposes of this section of the permit is to specify the procedures for making changes to the SWMP. A distinction is made between adding new components and replacing (or removing) components of the SWMP.

Most changes to the SWMP are considered a part of adaptive management and do not require modification of this permit unless the division determines that the magnitude of proposed SWMP revisions substantially change the nature or scope of the SWMP.

The division does not intend to require a permit modification should the permittee(s) annex additional lands or accept the transfer of operational authority over portions of the MS4. Implementation of appropriate SWMP elements for these additions is required.

1.8.1. Requirement to Ensure Adequate Resources to Comply with MS4 Permit

The annual fiscal analysis will show the allocated resources, expenditures, and staff resources necessary to comply with the permit, and implement and enforce the permittee's SWMP. (See 40 CFR 122.26(d)(2)(vi). The annual analysis is necessary to show that the permittee has adequate resources to meet all permit requirements. The analysis can also show year-to-year changes in funding for the stormwater program. A summary of the annual analysis must be reported in the annual report. This report will help the division understand the resources that are dedicated to compliance with this permit, and to implementation and enforcement of the SWMP, and track how this changes over time.

1.9. Enforcement Response Procedures or Methods

According to 40 CFR Part 122.26(d)(2)(E) the MS4 must "Require compliance with conditions in ordinances, permits contracts or orders." The permit contains the requirement to develop a set of procedures or methods that describe enforcement responses to violations and address repeat violations through progressive enforcement as needed to achieve compliance. These enforcement responses should be commensurate with the nature of the violation and must include enforcement responses progressing up to the maximum civil and criminal penalties as described in T.C.A. § 69-3-101, et. seq.

1.10. Sampling and Monitoring Requirements

1.10.1. Introduction

The phase I MS4 stormwater regulations set forth requirements such that MS4 cities will address at least three types of sampling during the term of their permits. The types of samples are as follows:

- representative data collection (refers to sampling stormwater discharges at Outfalls of the MS4 system; may be designed to describe an area of homogeneous land use);
- field screening for illicit connections and improper disposal; and,
- monitoring runoff from industrial sites.

In addition, large and medium MS4s might perform other types of monitoring as well, including but not limited to:

- in-stream sampling, both chemical and biological;
- stream bioassessments; and,
- BMP or other stormwater treatment system influent and effluent monitoring.

The monitoring requirements are intended to be an integral plan to evaluate the effectiveness of individual requirements of the Stormwater Management Program as well to measure the overall effectiveness of the program on entire streams and watersheds. The monitoring requirement programs are intended to be symbiotic. The data obtained from a specific monitoring requirement may be used to satisfy sampling requirements in another monitoring requirement. For instance, TMDL sampling data may be used to satisfy in-stream monitoring requirements.

1.11. Assessment of Controls

1.11.1. Need for assessments

The division believes an MS4 needs to assess the effectiveness of its stormwater quality management program for a number of reasons. These assessments serve many purposes such as:

- a step in determining whether the most cost effective best management practices are included in the stormwater management program;
- a means to ensure the operator of the MS4 is accountable to the public and other users of the MS4;
- to assist in designing ongoing monitoring, inspection and surveillance programs that help refine estimates of program effectiveness;
- a baseline and ongoing measuring stick of the progress of the program; and
- a step in developing a strategy to evaluate progress toward achieving water quality goals.

1.11.2. Proposed Assessments

A key requirement in the stormwater rule is a report (40 CFR 122.34(g)(3)) that includes “the status of compliance with permit conditions, an assessment of the appropriateness of identified [control measures] and progress towards achieving identified measurable goals for each of the minimum control measures.” This assessment is critical to the stormwater program framework which uses the iterative approach of implementing controls, conducting assessments, and designating refocused controls leading toward attainment of water quality standards.

Building on the monitoring and assessment program developed in part 4, the permittee must conduct an annual effectiveness assessment to assess the effectiveness of significant control measures, SWMP components, and the SWMP as a whole. The California Stormwater Quality Association’s (CASQA) Municipal Stormwater Program Effectiveness Guidance describes strategies and methods for assessing effectiveness, including examples of effectiveness assessment for each SWMP program component. The CASQA Effectiveness Guidance is available at www.casqa.org for purchase. A two-hour EPA webcast focusing on the CASQA Guide is also available (available at www.epa.gov/npdes/training under “Assessing the Effectiveness of Your Municipal Stormwater Program”). A resources document from the webcast includes a 10 page summary of the Guide and example pages from the municipal chapter (www.epa.gov/npdes/outreach_files/webcast/jun0408/110961/municipal_resources.pdf).

The Municipal Stormwater Program Effectiveness Assessment Guidance synthesizes information on designing and conducting program effectiveness assessments. The document also explains how to select certain methods based on programmatic outcomes and goals. The reader is led through a series of questions and case studies to demonstrate how proper assessments are selected. Techniques are related to different level of outcomes: level one – documenting activities, level two – raising awareness, level 3 – changing behavior, level 4 – reducing loads from sources, level 5 – improving runoff quality, and level 6 – protecting receiving water quality. The Guide includes fact sheets for all six NPDES program elements, outlining methods and techniques for assessing effectiveness of each program.

1.12. Consideration of Comments and Permit Issuance Decisions

The Division of Water Resources proposes to issue this permit with the described monitoring and reporting requirements and standard conditions. These conditions are tentative and open to comment. Interested persons are invited to submit comments for consideration.

Comments should be submitted to the following address:

Division of Water Resources
ATTN: Paul Higgins
William R. Snodgrass - Tennessee Tower
312 Rosa L. Parks Avenue, 11th Floor
Nashville, Tennessee 37243-1102

and/or by e-mail to paul.higgins@tn.gov.

1.13. Permit Term

This permit will be issued for a five-year term.